AIR CONDITIONING HEATING & REFRIGERATION NEWS
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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Story of the Week
Cold Notes
Honeywell to the Rescue
Model Stockholders' Report
Incidental Intelligence
As a Father, You Try Hard
What's Going On?
Philosophy of the Week
Misanthropic Comment
People Will Be People
The Hostess Was Shocked

Story of the Week

Holdup man shoved a sack and a note through the wicket to a bank teller.

"I have you covered," read the note. "Shove all your currency into this sack, and keep your mouth shut."

Teller answered with another note, on which he wrote:

"Please move to the next station. It's time for my coffee break."

Cold Notes

Selected members of the Canadian Air Force band are going to blow their hot licks real cool, man.

Cold room tests will determine at what point in the winter thermometer readings bandsman may, within the proprieties of military discipline, refuse to blow at frigid outdoor concerts.

Honeywell to the Rescue

Those ingenious fellows who work in Minneapolis-Honeywell's research department have achieved the ultimate:

An utterly safe, no-smoke cigarette filter. And we aren't kidding. Not just "less tars, less nicotine"—NO SMOKE!

Pursuing their studies of unpolluted air, they devised (for fun and relaxation) a cigarette holder which contains an electrostatic filter weighing less than one-tenth of an ounce.

Its lightning 3,000 volt punch absorbs all smoke at either end of the cigarette holder. Just draw and puff, friend, and be secure.

Model Stockholders' Report

International Fact Simonizing Corp.
New York, N. Y.

To Our Stockholders:

Your officers are glad to report business over the past year has vastly improved; in fact we almost broke even. Conditions

(Concluded on Page 7, Col. 1)

'Electric Utilities Need Home Heating, Cooling To Expand'

NEW ORLEANS — Heating and cooling or "climate control" must become a major portion of any continued rise in residential sale of electric power in the next decade, C. M. Wallace, Jr., vice president, Georgia Power Co., told delegates to the Edison Electric Institute annual convention here earlier this month.

An "all-out" program for the "load balancing" phases of climate control—the heat pump and electric resistance heating to be specific—was urged on the electric utilities by the speaker, who advocated complete company employe participation in the promotion, encouragement of strong dealer organizations, and utility cooperation in assuring proper installation and adequate service.

Establishment of a favorable rate structure was another recommendation. However, the speaker warned: "Do not, however, attempt to sell 'climate control' solely on the basis of price. We have something good to sell, something better than any other way of life. Sell the benefits."

Declared the speaker, "I think it beyond dispute to say

(Concluded on Page 22, Col. 1)

GSA Air Conditioning Study Text

Complete text of the General Services Administration's report on "Influence of Air Conditioning on Work Production" is published on pages 18 and 19 of this issue. Results of the study, made on two practically identical groups under almost identical conditions except for air conditioning, show the air conditioned employes to be 9.5% more efficient.

BEHIND PAGE ONE . . .

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Pa. Court May Rule on Dairy Equipment Ruling

HARRISBURG, Pa. — The Pennsylvania Milk Control Commission has asked the Pennsylvania Superior Court to uphold the validity of its rule prohibiting dairies from giving or lending refrigeration equipment to their customers.

The commission is appealing a decision by a Philadelphia Common Pleas court that the rule is unreasonable.

John P. McShea, Jr., assistant attorney general for the commission, expects the case to be argued the second week in June. He estimated that a decision might be forthcoming by September.

The commission's rule was contested by Milk Maid Dairy Products Inc. of Philadelphia.

The commission had suspended the dairy's milk dealer's

(Concluded on Page 25, Col. 4)

Revised Excise Ruling May Take Effect July 1

WASHINGTON, D. C. — The revised ruling on the 10% excise on room air conditioners, making it applicable to all room units, will probably be made public about June 1, to become effective July 1, according to informed sources here.

As applied under existing rulings, the tax is being applied only to units of less than 1 hp. However, the IRS has been considering some changes in the ruling since last year, and a recent U. S. Circuit Court of Appeals decision ruled that the tax

(Concluded on Page 25, Col. 3)

Recony Rebuilding Following Belle Isle Fire That Destroyed Three Buildings

RICHMOND, Va.—Rebuilding operations are under way at Recony Corp.'s plant on Belle Isle following a recent fire that leveled two of the company's 12 major buildings and left a third with only its front portion still standing.

The company is engaged primarily in the manufacture of components and assembly of trailer-mounted air conditioning units used in cooling military jet aircraft on the ground.

The assembly building, a warehouse for storage of component parts, and a building used by Old Dominion Iron & Steel Corp., a wholly-owned subsidiary, in the manufacture of small storage tanks were the structures that burned.

A company spokesman said a contract has already been let for construction of a new all-steel assembly plant. This plant will house the final assembly line, a warehouse, and manufacturing management offices, as well as machine shop, tool and die room, stock room, receiving department, and a lunchroom and other employe facilities.

In addition, he stated, Recony will modernize and enlarge two other buildings. One of these will be a new engineering and research center which will include environmental test chambers, model shop, and offices for engineering groups, he said.

The spokesman put the total cost of the rebuilding and expansion program at between $150,000 and $200,000. He said it will give the company one-third more manufacturing and operating space than was destroyed by the fire.

Andrew J. Asch, Jr., Recony president, said the burned buildings represented about 30,000 sq. ft. of the company's 142,000 sq. ft. of buildings on the island.

Stressing that it was a "ball park estimate," Asch said "a half-million dollar damage figure is about as good as we can do pending further investigation." He said there was ample insurance coverage.

Asch also emphasized that only the assembly and storage operations had been destroyed. "We're still manufacturing," he to lda reporter, "and expect to have assembly and warehouse buildings rebuilt in 30 to 45

(Concluded on Page 25, Col. 5)

Kelvinator Announces Top Management Shift

DETROIT — A top management change involving elimination of the position of vice president and general manager of the Kelvinator (U.S.) Div. was announced by B. A. Chapman, executive vice president and general manager of the appliance division of American Motors Corp.

Walter Jeffrey, who had been vice president and general manager of the Kelvinator Div. since 1956, has resigned. Chap-

(Concluded on Page 25, Col. 1)

Association Sets Standards For Home A.C.

Fort Worth Area Group May Adopt 'Seal of Approval' Program

FORT WORTH, Texas—Minimum standards for installation of residential central heating and/or air conditioning systems have been adopted by the Tarrant County Air Conditioning Association, Inc. here.

Exactly how the association intends to use and promote these standards is still in the discussion stage, but present thinking of members envisions possible use of a "seal of approval" for systems meeting the standards.

In introductory paragraphs, the association explains that "it is the intent and purpose of these standards to provide a central heating and/or air conditioning installation that will provide a maximum operating efficiency and optimum comfort conditions at minimum operating cost."

The association al emphasizes:

"It is recognized by this body that air conditioning design and engineering are not an exact science and that exceptions to the following set of rules must be taken into account. We believe, however, that a deviation from these rules should be submitted to the association for separate action along with the necessary engineering data to substantiate the variation. This

(Concluded on Page 25, Col. 2)

Acme Expansion Follows Record Setting Month

JACKSON, Mich.—Following the setting of new records for orders received and shipments made in one month, the board of directors of Acme Industries, Inc. has authorized construction of an additional 40,000 sq. ft. of manufacturing space, K. A. Weatherwax, president, announced.

In commenting on Acme's expansion plans, Weatherwax said:

"This expansion move is the latest step in a development program which began more than two years ago. At that time we acquired a 55-acre site on the west side of Jackson and erected the first units of a new and more efficient manufacturing facility.

"The new addition will bring total manufacturing space in the new plant to 160,000 sq. ft.

(Concluded on Page 25, Col. 4)

Borg-Warner Quarter Profit Up 55%

CHICAGO — Reporting that sales of Borg-Warner Corp. in the first quarter were 14.5% higher than a year ago and profit rose 55%, Robert S. Ingersoll, president, cited—among other things—increased demand for the air conditioning and heating equipment made by the York Div.

Ingersoll said incoming orders for York equipment "are up in the first quarter of this year from 60 to 95% over the same period in 1958, depending on the product category being considered."

He also called attention to contributions of the Norge division and B-W Acceptance Corp.

Ingersoll told stockholders at the annual meeting here that Borg-Warner Corp. realized a first-quarter net income of $7,770,000, equal to 86 cents a share, on sales of $149,714,000. This compares with 1958 first-quarter profit of $5,016,000, or 56 cents a share, on sales of $130,805,000.

Admiral Consolidated Net Sales Up 16%

CHICAGO—Admiral Corp. reported that consolidated net sales in the first quarter were $44,739,388, an increase of 16% compared with sales of $38,418,799 in the first quarter last year.

Profits after taxes for the first three months of this year were $711,644, or 30 cents a share, compared with a loss of $91,977, or 4 cents a share loss, in the same period one year ago.

Perfection Forms Advisory Council

CLEVELAND — A "Perfection Furnace and Air Conditioning Wholesalers Advisory Council" has been formed to provide grass roots advice on sales policies and programs to the manufacturer, Perfection Industries, division of Hupp Corp.

In periodic informal get-togethers, the distributors will meet with the manufacturer's sales department to discuss products, programs, and policies for future planning.

Five wholesaler representatives on the first advisory council are: Richard Young, Behler-Young, Grand Rapids; Lee Ward, J. S. Carpenter, Inc., Rochester; Ed Breese, Hajoca Corp., Philadelphia; Lee Merrill, Folansbee Supply, Chicago; H. L. McMurray, H. L. McMurray & Co., Jacksonville and Tampa.

NAPC, UA Announce Opposition To 'Anti Bid-Shop' Bill (H.R. 176)

WASHINGTON, D. C. — The National Association of Plumbing Contractors announced that its board of directors has endorsed a policy statement recommended by its Legislative Committee opposing H.R. 176, the so-called "anti bid-shop" bill, and putting forth a suggested plan of constructive action to amend or alter the legislation.

In a separate announcement, General President Peter T. Schoemann of the United Association of Plumbers and Pipe Fitters, AFL-CIO, made known his union's "vigorous opposition" to the bill.

NAPC President John M. Rhoades revealed that the board ratified the committee's report which called the new bill "unacceptable to NAPC" because of its inclusion of a preamble favoring the single contract system of federal construction, plus other language permitting a five-day bid-shopping interval and an "unrealistic" 5-ft. limitation on contract terms.

The measure was introduced by Rep. Thomas J. Lane (D., Mass.).

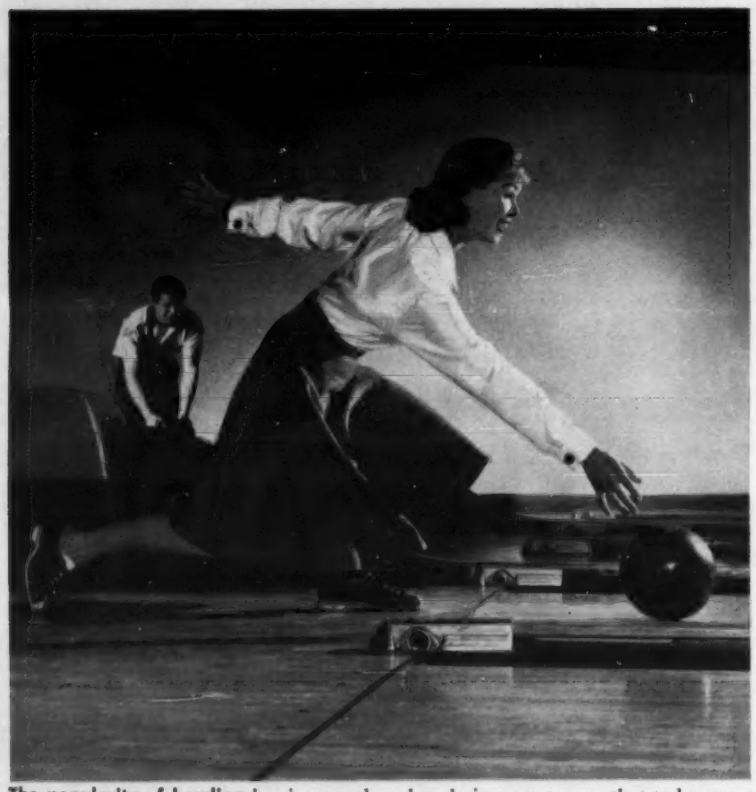
The committee's report also dictated a course of action to develop and support "proper legislation" to restrict bid-shopping and bid-peddling. It recommended an attempt to revise H.R. 176 into an acceptable measure.

If such a version is not supported by all the construction industry, NAPC's board agreed that an alternate bill providing for a complete separation of bidding and contracting federal work should be advanced by the association.

H.R. 176 is said to be similar to H.R. 7168, which passed the House two years ago but died at adjournment without a Senate vote. It was opposed by NAPC, Refrigeration & Air Conditioning Contractors Association, the UA, and nearly a dozen other associations of building contractors and unions in non-mechanical construction trades.

Noting that the NAPC board has come out against H.R. 176, Shoemann in his announcement declared: "We support the Plumbing Contractors 100%. We are against this bill all the way because it would be definitely damaging to the livelihood of our members."

In bowling alleys and banks, bakeries and beauty parlors... **You'll find**



The popularity of bowling has increased so sharply in recent years that today more Americans actively participate in bowling than in any other indoor sport. Air-conditioned alleys have made it possible for bowlers to enjoy the game the year round.

genetron®
SUPER-DRY REFRIGERANTS

Approved! Accepted! Preferred!

In thousands of applications, you'll find "Genetron" refrigerants filling the air-conditioning and refrigeration needs of modern America. "Genetron" refrigerants offer unexcelled purity and dryness . . . and their strict quality specifications are consistently *bettered* in production. Leading equipment manufacturers, refrigeration engineers and air-conditioning and refrigeration wholesalers approve, specify and recommend them. They know they can always count on "Genetrons" for dependable, trouble-free service.

"Genetron" Super-Dry Refrigerants are available from wholesalers everywhere, coast to coast. See your wholesaler. Insist on "Genetron"!

genetron 11 ORANGE LABEL CCl_3F
TRICHLOROMONOFLUOROMETHANE

genetron 12 WHITE LABEL CCl_2F_2
DICHLORODIFLUOROMETHANE

genetron 22 GREEN LABEL $CHClF_2$
MONOCHLORODIFLUOROMETHANE

genetron 113 PURPLE LABEL $C_2Cl_3F_3$
TRICHLOROTRIFLUOROETHANE

genetron 114a BLUE LABEL $C_2Cl_2F_4$
DICHLOROTETRAFLUOROETHANE

Air-conditioning is a "must" inside bank vaults, museum and library storage rooms and other areas where, for security reasons, there are no windows or little air circulation. Precise control of temperature and humidity also protects important records against atmospheric variations.

Modern baking is a highly mechanized operation—far removed from grandma's oven. In this photo, crackers pour from the delivery end of an automated travelling oven. Air-conditioning is used in large commercial bakeries today to control temperature and humidity and for employee comfort.

It gets pretty hot under a hair dryer—even *with* air-conditioning. And the girls like to enjoy having their hair done. That's why so many beauty parlors are so well air-conditioned. It benefits customers . . . employees . . . *and* owners!

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

Allied Chemical

OHI Eastern Region Clinics Set for Boston June 3-4

NEW YORK CITY—The Distribution Div. of the Oil Heat Institute of America announced that its eastern regional management clinics will be held this year at the Sheraton-Plaza hotel in Boston, June 3 and 4.

All sessions will be held in the morning between the hours of 9 and 12:30.

The first day's clinic will be devoted to "Credit, Accounting, Insurance and Office Management Procedures." The clinic moderator will be Everett Elliott, treasurer, C. L. Elliott Co., Danvers, Mass. and vice chairman for the east of the OHI's Distribution Div.

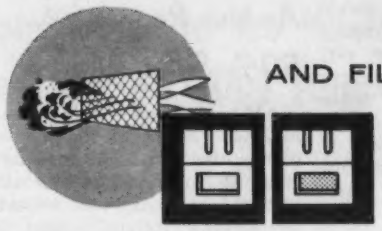
The June 4 session will discuss "Sales, Sales Promotion and Sales Management." T. R. (Tim) Loizeaux, president, T. R. Loizeaux Fuel Co., Plainfield, N. J., will moderate this session. He is national chairman of the Distribution Div. and a vice president of the OHI.

For panelists at the two sessions the OHI will bring together a group of 18 men, all experts in their fields.

Persons wishing to attend may do so by communicating with the Oil Heat Institute of America, Distribution Div., 500 5th Ave., New York 36, N. Y. Registration fee for the clinics is $4 if paid in advance; $5 if registering at the clinics.

WITH ELECTRO-MAGNETIC FILTER

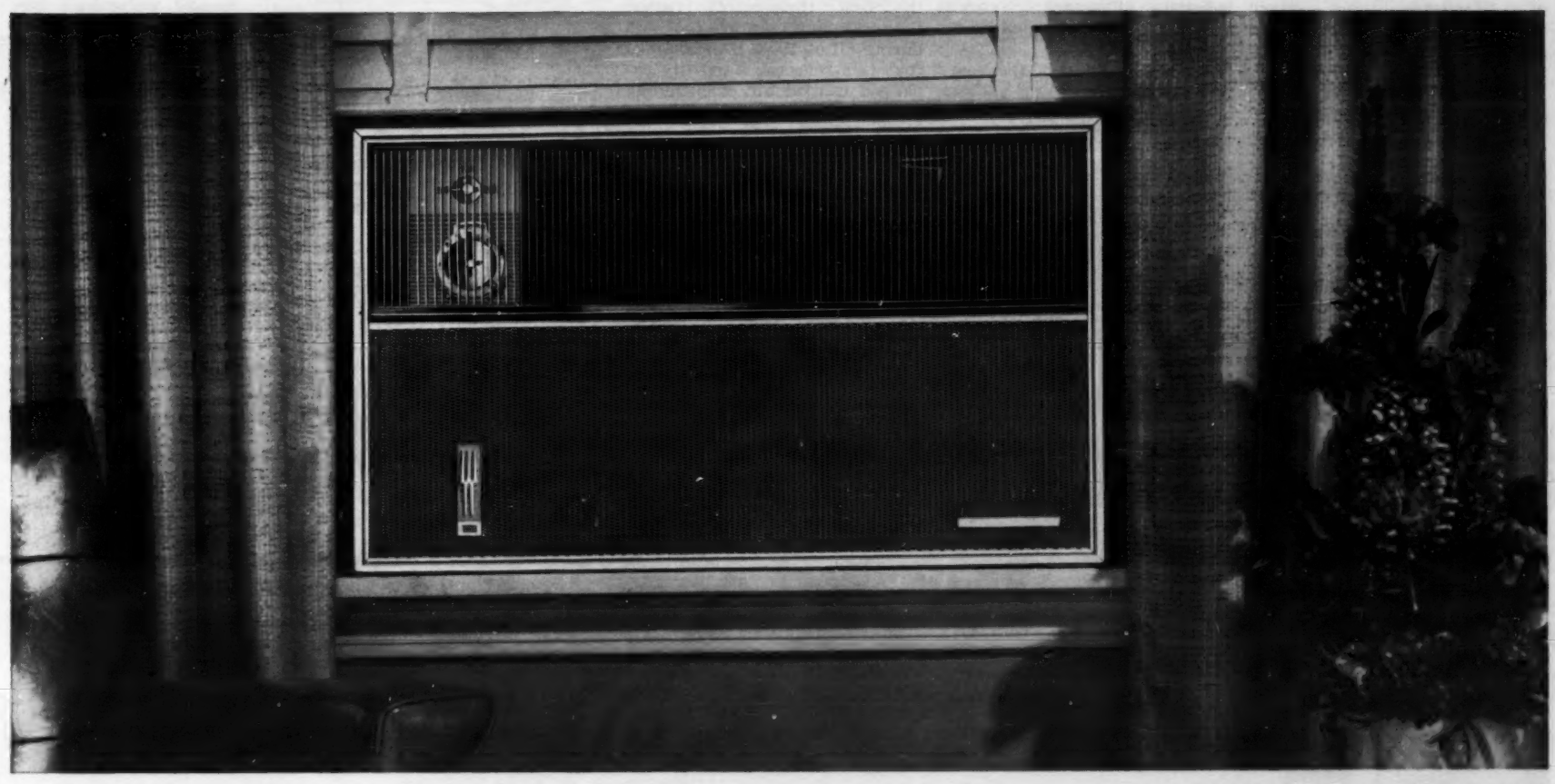
Removes up to 99.5% of harmful dirt, dust and pollen as compared to 65% for ordinary filters! Operates on an entirely new electrostatic principle.



AND FILTERMATIC SIGNAL:

Tells automatically when the Electro-Magnetic Filter needs cleaning! Signal shows "white" when it's clean . . . changes to "red" when it's dirty.

Kelvinator Gives You The Greatest Room Air Conditioner Sales Story In A Decade!



NEW 1959 KELVINATORS give you the first really fundamental advance in room air conditioner design in a decade! With Electro-Magnetic Filter and Filtermatic Signal, they provide the ultimate in air cleaning . . . and an unmatched sales story! "*Masterpiece*" *Models* (above), in 1, 1½, 2, 2½ H.P. sizes, also include adjustable automatic thermostat, fresh air intake and room air exhaust, two-directional cooling, two-speed fan. *Custom Models* in 1½, 2, 2½ H.P. sizes, with deluxe features but standard filter, sell at budget prices. Profit with the sales advantages only Kelvinator can give . . . contact your Kelvinator representative today for full details of these remarkable new room air conditioners.

FULL ½ H.P. PORTABLE DELIVERS 4200 BTU'S

Ideal bedroom size! And it includes a simple dial-operated automatic thermostat, plugs into any 115-volt outlet. Compact size fits any standard window.

"SPACE SAVERS" ONLY 23″ WIDE, 14″ HIGH

. . . with low, low prices! Three 1 H.P. models: 115 volt, 7½ amp.; 115 volt, 12 amp.; and 230 volt. Each features two-directional cooling, two-speed fan, fresh air intake.

"Balanced-Comfort" Design provides all four freedoms of true air conditioning!

- **MORE FREEDOM FROM HEAT!** Correct balance between all parts of the system assures top cooling capacity!
- **MORE FREEDOM FROM HUMIDITY!** Carefully balanced cooling coils wring more moisture from the air!
- **MORE FREEDOM FROM FAULTY CIRCULATION!** Powerful fans and two-directional control give balanced air flow!
- **MORE FREEDOM FROM DIRT, DUST AND POLLEN!** Electro-Magnetic Filter and Filtermatic Signal provide the cleanest possible air!

Built Better to Serve Better

LIVE BETTER ELECTRICALLY

AMERICAN MOTORS MEANS MORE FOR AMERICANS

Kelvinator

Division of American Motors Corp., Detroit 32, Mich.

Residential Duct Advisory Criteria Set

WASHINGTON, D. C. — The Building Research Advisory Board announced that one of its special advisory committees has completed a study and an advisory report on "Criteria for Ducts to be Used in Residential Warm Air Heating and Air Conditioning Systems."

The study was requested by the Federal Housing Administration.

The ad hoc committee, under the chairmanship of Paul R. Achenbach, chief, Air Conditioning, Heating and Refrigeration Section, National Bureau of Standards, has given thorough consideration to the many technical aspects of the problem, it was pointed out.

As a result of the study, recommendations have been made which can serve as a basis for making acceptability determinations based on performance for ducts fabricated from any material.

The objective was to define the properties or characteristics a duct should possess to enable it to perform satisfactorily and to describe tests needed to demonstrate these qualities.

The Printing and Publication Office, National Academy of Sciences - National Research Council, 2101 Constitution Ave., Washington 25, D. C. has this 56-page report for sale at $1.25 per copy. Order NAS-NRC Publication 651.

The Building Research Advisory Board is a unit of the Division of Engineering and Industrial Research, National Academy of Sciences-National Research Council.

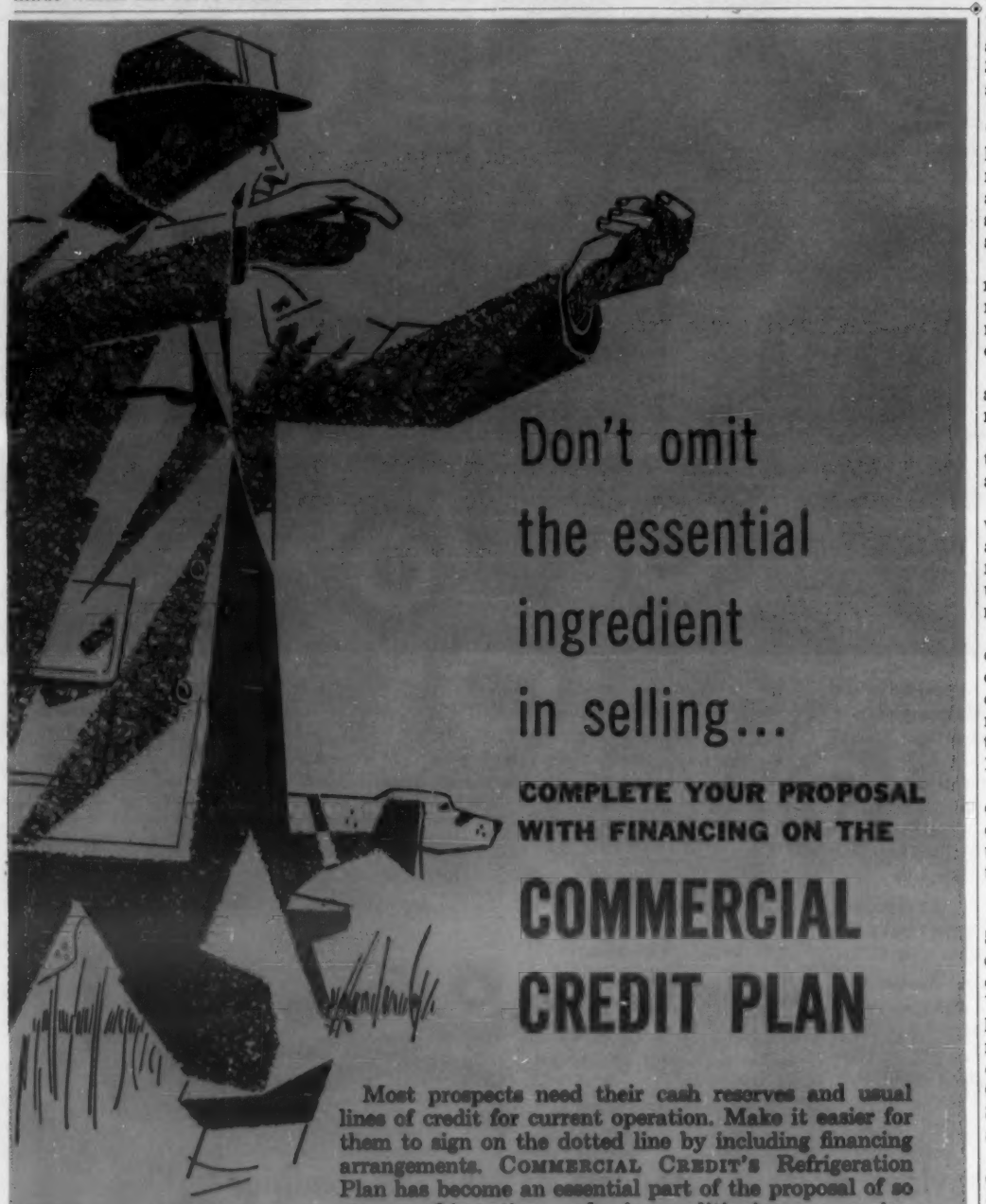
The membership of the board is drawn from building authorities in industry, government, and academic institutions.

Amana Reports 50% Sales Rise

AMANA, Iowa—A 50% sales increase for all of its products during the first three months of 1959, as compared to the same period last year, was reported by Amana Refrigeration, Inc. recently.

George C. Foerstner, the firm's executive vice president, said the heavy increase was spearheaded by a strong consumer demand for the combination freezer - plus - refrigerator units and central air conditioning.

Foerstner said Amana sold more central air conditioning in the first three-month period than it manufactured and sold during all of 1958. He explained that this reflected a greatly expanded central air conditioning program inaugurated with the firm's 1959 line.


Don't omit
the essential
ingredient
in selling...
COMPLETE YOUR PROPOSAL
WITH FINANCING ON THE
COMMERCIAL
CREDIT PLAN
Most prospects need their cash reserves and usual lines of credit for current operation. Make it easier for them to sign on the dotted line by including financing arrangements. COMMERCIAL CREDIT'S Refrigeration Plan has become an essential part of the proposal of so many refrigeration and air conditioning companies.
COMMERCIAL CREDIT'S Refrigeration Plan is tested by time and experience in handling the financing for thousands of commercial installations. Let us show you how COMMERCIAL CREDIT'S experience and know-how can save you time and money . . . and help you close sales with less delay. Call the nearest COMMERCIAL CREDIT office or write COMMERCIAL CREDIT CORPORATION, 300 St. Paul Place, Baltimore 2, Md.
BUY ON TIME
COMMERCIAL CREDIT PLAN
ANOTHER SERVICE OFFERED BY AFFILIATES OF COMMERCIAL CREDIT CORPORATION

Climatological Evaluation Chart for May Gives Ratings for 32 Cities In '57, '58

NEW YORK CITY — The NEWS herewith presents the first of four charts, being published month-by-month, which comprise a "climatological evaluation of air conditioning weather for the key months of 1957-58" (May through August) made by Weather Trends, Inc., a private weather forecasting and weather-recording organization.

The charts are being published with the thought that they will be of value to those in the air conditioning industry who are gearing promotional efforts to individual markets.

As explained in the March 9 issue of the NEWS in a general report on the Weather Trends studies, a 5, 4, 3, 2, 1 rating was placed on the air conditioning "sales climate" for 32 major U. S. cities. Number meanings are: 5—superior; 4—favorable; 3—near normal; 2—unfavorable; and 1—poor.

All ratings are related to "normal" conditions based on long-term Weather Bureau records. Also reviewed and analyzed, and taken into consideration for the ratings, were such matters as:

1. Departures of average monthly temperatures, average maximum, and average minimum readings for each city and each month.
2. Number of days of 90° and over as compared to normal.
3. Duration and extent (extreme reading) of hot spells, if any, during each month.
4. A check on the number of wet days, humidity readings, and percentage of sunshine to normal to see if there were any unusual departures from normal.

Weather Trends' findings quite generally bore out the industry contention that air conditioning salesmen didn't get much help from the weather in the "cooling season" during 1958 and 1957.

For example, the chart reproduced here indicates that May of last year, while not showing up too badly, was hardly spectacularly good.

For that month, only one city (Phoenix) of the 32 total got a 5 (superior) rating and 11 received "favorable" ratings. Five of the 32 cities—Miami, New York City, Philadelphia, Raleigh, and Richmond — were rated "unfavorable." Fifteen cities, including Atlanta, Boston, Cleveland, Detroit, Memphis, St. Louis, and Washington, got a 3 (near normal) rating.

While it is impossible to predict any weather trend for any specific period, at the same time weather does tend to "average out" over a period of years. If this be so, then this tendency to a law of averages should bring about hotter-than-usual summer conditions in the near future.

Climatological Evaluation

City	May 1958	May 1957
Atlanta	3	3
Baltimore	3	4
Birmingham, Ala.	4	3
Boston	3	4
Buffalo	3	3
Chicago	4	3
Cincinnati	3	3
Cleveland	3	3
Dallas	4	2
Denver	4	2
Des Moines	3	3
Detroit	3	3
Houston (U)	4	3
Indianapolis	3	3
Kansas City	3	3
Los Angeles	4	3
Memphis	3	3
Miami (U)	2	3
Minneapolis	4	3
New Orleans (U)	4	4
New York City (U)	2	3
Oklahoma City	3	2
Omaha	4	2
Philadelphia	2	3
Phoenix	5	2
Pittsburgh	3	3
Portland, O. (U)	4	3
Raleigh	2	3
Richmond	2	4
St. Louis	3	3
Washington	3	4
Wichita	4	2

Legend: 5, superior; 4, favorable; 3, near normal; 2, unfavorable; 1, poor.

Note: All "ratings" are related to NORMAL conditions based on long-term Weather Bureau records. Data used are from airport weather stations unless (U) is indicated which refers to "urban" or city station.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

OHI Promotion Piece Sales Set Record

NEW YORK CITY—A year-end report on the "Treasury of Advertising" of the Oil Heat Institute of America discloses that all previous records with respect to the sale of Oil Heat promotional pieces have been shattered.

According to Charles H. Burkhardt, national secretary of the OHI's Distribution Div., over 5,000 individual orders resulted in the sale of over 6,000,000 promotional pieces on oil heat.

From March, 1958, through February, 1959, 26 "treasury" pieces were printed in addition to six calendar-type items, it was reported.

ROTARY SEAL
Replacement Units
Available in a wide size range for Commercial, Semi-Commercial, Air Conditioning and Home Refrigerators.
EASY TO INSTALL ★ ECONOMICAL

AT ALL LEADING JOBBERS
ROTARY SEAL DIVISION
MUSKEGON PISTON RING CO.,
SPARTA, MICHIGAN

'Isotron' Promotions Underway

TOM WELSH, manager of United Refrigeration Co., a wholesaler with four outlets in the Greater Philadelphia area, explains to a customer how servicemen can build up points to get free cylinder stands in Pennsalt's Isotron promotion. Point-rated tags attached to every Isotron cylinder are worth from one to 10 points, depending on cylinder size. Servicemen get a free cylinder stand for every 30 points.

Free Cylinder Stand, Factory Sealed Containers Offered

PHILADELPHIA — With the announcement of its free cylinder stand promotion in mid-April, Pennsalt Chemicals launched the second nationwide merchandising campaign for air conditioning and refrigeration wholesalers and servicemen within a month's time, the firm reported.

The announcement reached wholesalers on the heels of an equally extensive campaign to introduce Pennsalt's factory-sealed containers for its "Isotron" refrigerants, it was pointed out.

Both campaigns offered wholesalers and servicemen incentives to use Pennsalt Isotron refrigerants, and both were timed to alert the trade at the advent of the heavy air conditioning and refrigeration season ahead, it was further noted.

To promote the free cylinder stand, Pennsalt provided wholesalers with colorful die-cut brochures, counter stands, cylinder tags, and window streamers. Cards explaining how the newly-designed Pennsalt cylinder stand could be obtained free were sent to 15,000 refrigeration and air conditioning servicemen.

The brochure to wholesalers explained the promotion and contained a reprint of a current advertisement on the promotion.

"The plan, under which salesment could get the rugged, non-tip base stand which fits all cylinder sizes, is based on the redemption of point-rated tags attached to each cylinder of Isotron," it was explained. "Values of the tags range from one to ten points depending on the size of the cylinder of Isotron to which it is attached.

"When an Isotron customer has accumulated 30 points, he cashes in his tags for a stand. There is no limit to the number of stands he can get."

A month earlier Pennsalt used a two-pronged mailing campaign to introduce the new Isotron factory-sealed cylinders. A complete kit of promotional material went to wholesalers. Another mailing went to servicemen.

"Response from wholesalers everywhere indicated that the campaign was successful," the company said.

"Among the barometers: heavy orders of imprinting of 'easy order' forms.

"Pennsalt Isotron men are optimistic about the cylinder stand promotion, forecasting sales activity as good or better for the second of their double-barrelled pre-season promotion."

Combustion In the Heating Industry To Be Topic of 1-Day ASHRAE Convention

CLEVELAND — A one-day conference on combustion in the heating industry will be held on Thursday, May 21, at the American Society of Heating, Refrigerating & Air-Conditioning Engineers research laboratory here.

Explaining the purpose of the conference, the parley program states: "During the last decade, an enormous amount of research has been carried out relative to the high energy release rates associated with jet propulsion, rockets, and gas turbines, and our knowledge in this field has been greatly enhanced.

"Unfortunately, the research aspects of combustion in the less spectacular field of heating usage have been neglected.

"Nevertheless, a large segment of our economy is associated with the use of combustion for heating, using gaseous, liquid, and solid fuels. Proper utilization of these fuels is important in many aspects, ranging from the economic to that of air pollution control. . . .

"The conference has been planned to find where we are, what our most pressing needs are, and what should be done. . . ."

Program for the meeting follows:

8:30 a. m.—Registration—Laboratory foyer.

9:30 a.m.—Opening remarks by the conference chairman, M. W. McRae, Crane Co.

Keynote address by Burgess H. Jennings, research director, ASHRAE.

Panel presentation.

"Burner Performance and Fuel-Oil Properties"—R. C. Wright, Iron Fireman Mfg. Co.; J. G. Partch, The Standard Oil Company (Ohio); R. P. Gilmartin, Gulf Research and Development.

"Atomization of Liquid Fuels"—E. O. Olson, Delavan Mfg. Co.; John A. Bolt, Standard Oil of Indiana.

"The Mixing of Fuels and Air"—Oil fuels, A. A. Putnam, Battelle Memorial Institute; gaseous fuels, W. B. Kirk, American Gas Association Laboratories; stabilization of combustion, Richard G. McCafferty, NASA.

12:30 p.m.—Luncheon.

1:30 p.m.—Panel presentation resumed).

"Combustion In Relation to Air Pollution"—W. C. L. Hemeon, Hemeon Associates.

"Combustion In the Future: Catalytic Combustion, Fuel Cells"—Walter Ross, National-U. S. Radiator Corp.; Everett Gorin, Consolidation Coal Co.

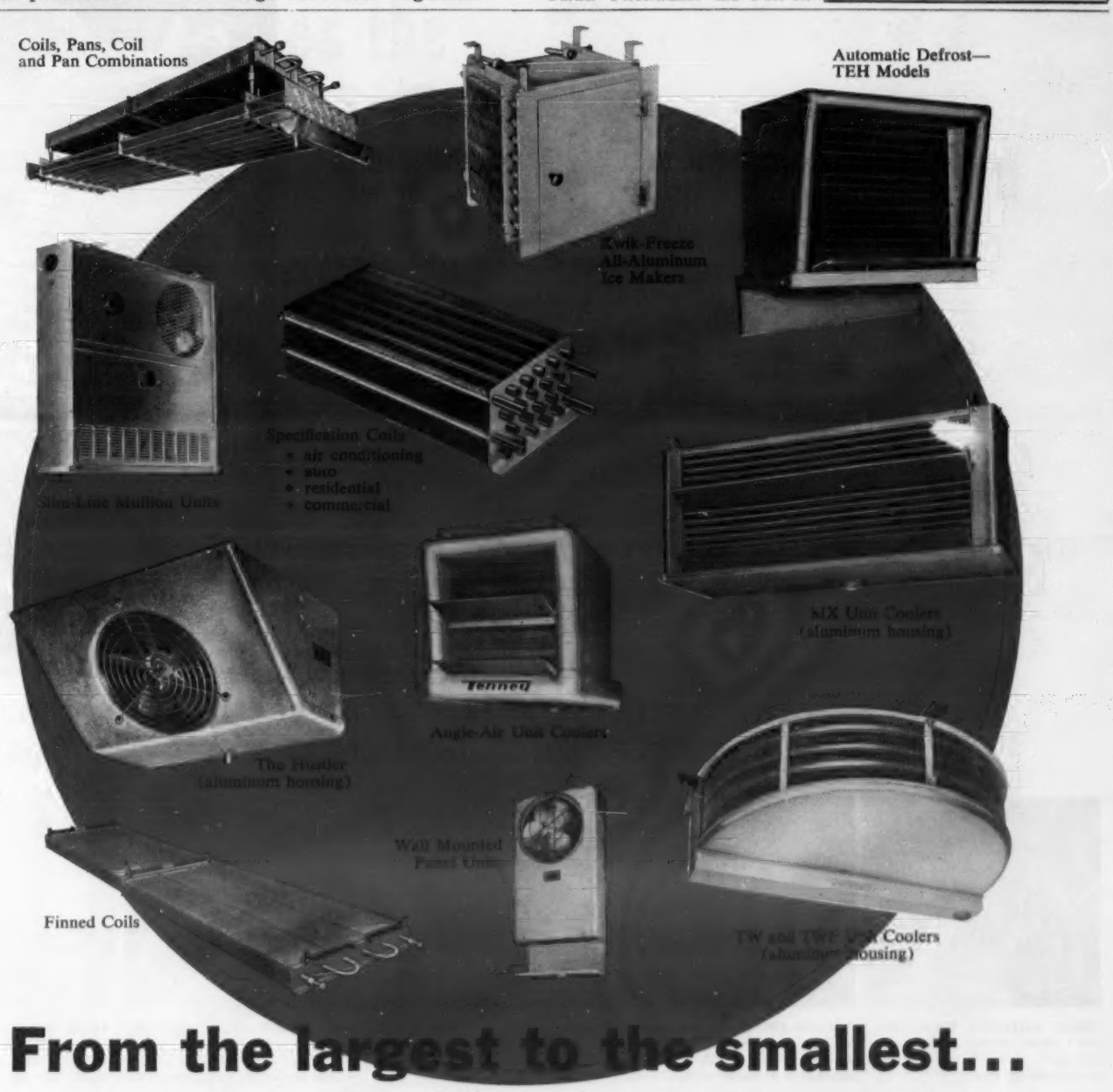
2:45 p.m. — Audience participation session.

3:30 p.m. — Summary of conference by Dr. R. C. Jordan, chairman, ASHRAE Research and Technical Committee.

Recommendations.

4:15 p.m.—Adjournment.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.



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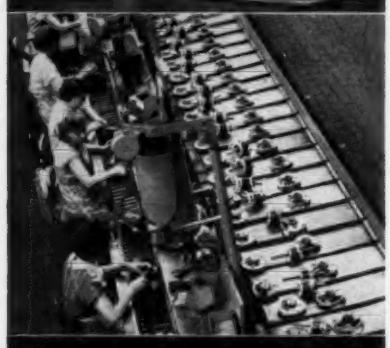

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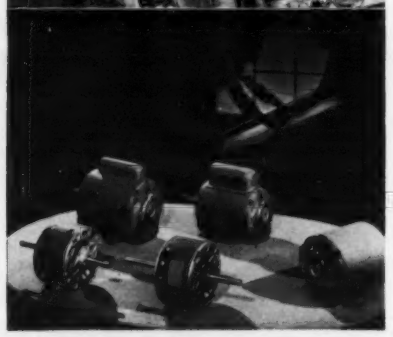

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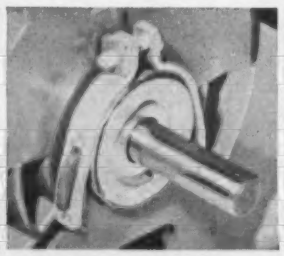

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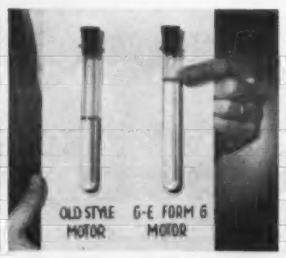

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Progress Is Our Most Important Product

GENERAL ELECTRIC

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

over the 12 months were spotty. This was also true of your officers. . . . And if you had been on the spot as much as they, you would be spotty, too.

We feel that much of the company's success during the year was due to a more vigorous policy of trying to make the best of it all. It has been the custom of the company officers to worry too much. Under the new policy 70% of our officers have cut their fretting down 86½% for the fiscal year. . . .

Your company was able to get a little work done around the plant by naming six vice presidents in charge of visits from tax agents, thus saving the higher executives a major amount of time.

We built a new wing onto the factory in which all data, facts, figures, reports, explanations, and apologies demanded by the government may be prepared and turned out. This plant is capable of answering 500,000 inquiries from Washington per week.

Plans are being drawn for a half million dollar annex in which all summonses to Congressional probes can be received, filed, and cataloged without confusion.

The company has also appointed a vice president in charge of nervousness, a vice president in charge of apprehensions, and two vice presidents in charge of grave misgivings.

Orders during the year reached the highest peak in 10 years, unless we are standing in a hole and getting a wrong slant on altitude. . . .

Summary: The general outlook is good. Car loadings are doing nicely. Boat landings are firm. Auto loadings are improving. Bicycle loadings are nothing to be sneezed at.

Our stockholders will be glad to hear that after a suspension of the custom over the lean years, we have decided to renew distribution of art calendars to all stockholders.

Please notify the company of any change of address so that you may be kept in touch with all bad news.

International Fact Simonizing Corp.

Incidental Intelligence

Exquisite Form Brassieres, Inc., has merged with I. Rokeach & Sons (Kosher food products).

Cause and effect?

As a Father, You Try Hard

Teen-age Charlie posed a dilly of a question to his father:

"Dad, if God makes some girls brunettes, and drugstores makes some girls blondes, who makes the redheaded girls?"

After awhile his father hedged:

"That, son, is something I've often wondered about."

What's Going On?

Caught-in-the-act by a conservation officer, Joseph Q. Angler meekly submitted to a modest fine in court. He'd snared, according to the Fish Warden's charge, 11 more finnies than the legal limit.

"Judge, yeronner," piped up our Joe, "I'll pay you double for a copy of this court action. The boys back home won't believe what I did unless it's notarized."

Employes of the District of Columbia had a hard time figuring out this directive from Congressional commissioners:

"The second non-work day of the calendar week is hereby established as the regular non-work day in lieu of Sunday for the purposes of this subsection except that the first non-work day of the calendar week is hereby established as the regular weekly non-work day in lieu of Sunday for the uniformed force of the fire departments."

Those who have the time and money to be sinful can't afford to be caught at it.

Philosophy of the Week

It's nice to understand why Eisenhower's favorite reading is western novels. It makes a nice change to read about a world in which telling the good guys from the bad guys is no problem.—*Hartford Courant.*

Many men are able to make a place in the *sun* for themselves because they are a *shade* better than the next fellow.—*CPA Woman.*

Misanthropic Comment

Life just isn't fair to men. When they are born, their mothers get the compliments and flowers.

When they get married, their brides get the presents and publicity.

And when they die, their widows get the insurance and the winters in Florida.

Observing the all-too-human derelictions of *some* well-to-do widows has made many a man wish he had spent more money on himself (and less on insurance) in his earlier years. All this "filosofizin" points the moral to the following story:

After Mr. Blackmarket's widow died, her "remains" were exhibited in the front room of her home—so that her neighbors could moan publicly before she was taken off to the cemetery.

Exclaimed one: "Doesn't she look marvelous?"

"And why shouldn't she?" decried another neighbor. "Didn't she spend the whole winter in Miami Beach?"

Announced the coy widow: "I'm really an old-fashioned girl."

"Really?" responded her new beau.

"Indeed yes; old fashioneds are all I ever drink."

People Will Be People

Draft-board Psychiatrist: "Are you troubled by improper thoughts?"

Teen-Ager: "Nah. I kinda enjoy them."

The Hostess Was Shocked

In air transport circles a "short" is a traveller who made his reservation too late to be included on a "flight."

If possible, when removed from a "flight" he is given what is known as "protection," i.e., overnight hotel facilities, or a railroad ticket to his destination.

A new American Airlines stewardess, unfamiliar with this jargon, was startled to receive this radiogram in mid-air:

"Prepare to remove shorts at Detroit. No protection."

CC takes the BIG LOADS off your mind

High capacity AP Thermostatic Expansion Valves... built to be installed and forgotten

These AP big load thermostatic expansion valves are industry-wide favorites on large commercial applications. Their capacities vary but they all feature the same AP dependable performance. Just select the capacity you need, install the valve and the job's finished!

The valves shown here are part of industry's most complete line of refrigeration and air conditioning controls. Take advantage of this single source availability — your assurance of dependable performance. For further facts, write for Bulletin E220.

MODEL 214 — Specifically designed for R-22 service but also available for R-12. Solder connections. Adjustable superheat. External equalizer. Standard liquid charge or pressure limiting gas types are available. Capacity: 1, 2, 3 tons R-12; 2, 3, 5 tons R-22.

MODEL 217 — Engineered to meet the requirements established by manufacturers of packaged air conditioners. Solder connections. Adjustable or non-adjustable superheat. Internal or external type equalizer. Standard liquid charge or pressure limiting gas charge. Capacity: 5, 7½, 12½ tons R-12; 7½, 11, 19 tons R-22.

MODEL 218 — A large capacity thermostatic expansion valve featuring special disc and seat construction giving more valve capacity per unit of stroke. Adjustable superheat. External type equalizer. Available with pressure limit. Capacity: 16, 19, 25 tons R-12; 27, 35, 45 tons R-22.

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Warm Weather Comfort Costs No More Per Year Than Cigarettes for Typical Family—Carrier

NEW YORK CITY—"A typical family is likely to pay no more for complete warm weather comfort than for cigarettes, only a little more than for beer and whiskey, and far less than for owning a car," contends Russell Gray, vice president of Carrier Corp. and general manager of its Unitary Equipment Div.

Costs of good summer air conditioning and winter heating, and the advantages of both were outlined by Gray at the recent "seminar on air conditioned living" which Carrier staged here for representatives of the consumer and trade press.

"Improvements in design and the simple facts of mass production have brought year-round air conditioning within reach of moderate-income families," Gray explained.

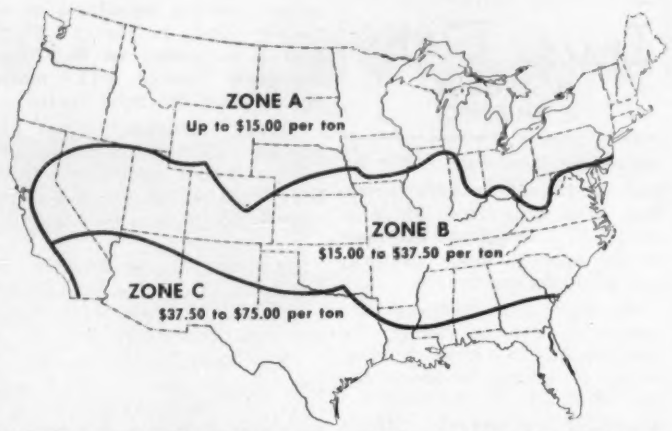
Yet, he pointed out, "most people need more information than they now have on how to buy . . . the greatest need is advice on the purchase of heating, for more than two-thirds of the nation's homes today are not properly heated," he declared.

Cost of central warm-air heating in a typical three-bedroom, 1,200-sq. ft. house should range from $300 up to about $750, depending on such factors as climate, builder volume, and effective planning for the most economical installation, Gray said.

"Replacing a heating system in an older home presents a more complicated picture," he explained. "At the low end of the scale we might need only to substitute a new furnace. In our typical three-bedroom . . . home . . . this might mean $275 to $375. You can get a cheaper one but you may not be happy with the results," Gray cautioned.

"Replacement may involve changes in the duct system and outlets to provide greater comfort. Here you may be getting into the same cost range as that for a new system.

"I should make it clear that these are averages only and apply to houses of the one-story type and of general size mentioned," he emphasized. "Larger homes and those where there might be additional problems such as extending ductwork to a second or third floor would increase the cost."



AVERAGE seasonal cooling costs per ton, as estimated by Carrier Corp. based on its 24-hour load estimating methods, operating characteristics of Carrier air-cooled equipment, and electric rate of 1½ cents per kwhr.

Cost of cooling in new construction, Gray indicated, averages from $225 to $375 per ton.

Residential Cooling Rule of Thumb

"To avoid confusion about the reference, a handy rule of thumb in residential air conditioning is that a ton of cooling is needed for every 600 sq. ft. of floor area, always assuming, of course, that the house is reasonably well designed and insulated. You may need a little more capacity in some southern locations and a little less in the North. But you will find the estimate fairly close almost anywhere," Gray said.

"In older homes the cost situation is quite different. It depends on how well the heating system lends itself to addition of summer air conditioning. If it has been designed for this, then the installed price should be $150 to $200 more per ton than in new construction. If it is necessary to supplement the furnace air capacity, cut into or remodel the ductwork, or replace the outlets, the expense will be greater.

"A survey of several of our distributors in different parts of the country indicates that the average cost has been about $400 to $500 a ton. The amount of work needed to adapt your heating system will determine whether you will pay less or more than this middle range," he explained.

Cost of Operating Summer Air Conditioning

"Having discussed the initial price, let's turn to the cost of operating summer air conditioning. The expense will, of course, vary widely with the climate and the electric rate. It will also depend on how the family operates the system. Some people like cooler temperatures than others or are more inclined to leave doors open.

"I have had a map of the United States divided into three zones to give you the summer cost picture. In each zone, somewhat similar operating requirements are found. In Zone A, the operating cost per ton based on our capacity estimating method and assuming an electrical rate of 1½ cents a kilowatt hour will be up to $15 for an average cooling season; in Zone B from $15 to $37.50; and in Zone C from $37.50 up to $75 in a few fringe areas.

"Now, of course, few seasons are average, and there are exceptions as I mentioned earlier.

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use this practical guide to Quality!

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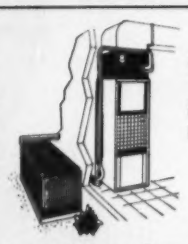

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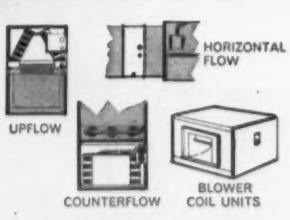
CERTIFICATION APPLIES ONLY WHEN USED WITH PROPER COMPONENTS AS DESIGNATED BY MANUFACTURER.

To provide the highest possible standards in quality and performance, Rheem is an active participant in the air conditioning certification program administered by the Air Conditioning and Refrigeration Institute. Every Rheemaire unit carries a 5 year warranty.



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RESIDENTIAL. Rheemaire can be installed anywhere with any type heating system. There are 8 Rheemaire models from 22,000 B.T.U. to 75,000 B.T.U. capacity.

COMMERCIAL. The quiet, efficient Rheemaire air handlers, available in both horizontal and vertical models, offer many versatile commercial applications.

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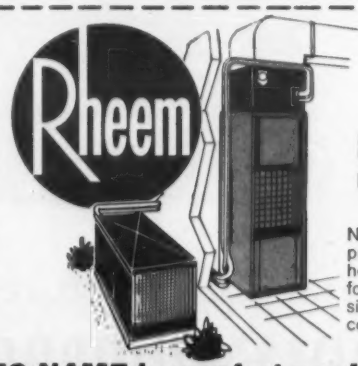
OPERATING ECONOMY

The patented, exclusive Rheemaire condenser provides the operating economy that saves homeowners and store owners up to 40% in operating costs each month. Compare this with the operating costs of other units and you'll buy and install Rheemaire.

QUALITY IS GOOD BUSINESS

Satisfied customers mean an end to profit killing call backs and replacement. Quality materials and skilled workmanship mean an end to costly adjustments and repairs. Rheem is known the world over for the performance and quality leadership that assures satisfaction. That's why more and more Rheemaire air conditioning systems are being installed every day.



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But this can be accepted as a good guess over the years for most families. Your electric rate may be different from the cent and a half we used. How do you find what it is? Ask your power company. Rates vary greatly but in most cases for central air conditioning you will pay their lowest residential rate. Remember all costs given here are on a per ton base," Gray said.

Heat Pump Costs

"I'd like to conclude this section on costs by mentioning the heat pump. As you know, it is a device which can extract the heat contained in outside air even during cold weather and pump this warmth into the house at comfort maintaining temperatures during the winter. Then in summer, it reverses itself and operates as a cooling system.

"Only a few years ago installed prices ranged from $1,800 to $2,500. Although we have sold them in increasing numbers each year, the initial expense has been a problem in medium and lower-priced housing. A few months ago we began producing a new heat pump suitable for heating and cooling houses in the lower price ranges. It can be sold and installed in many cases for less than $1,000. And in fact, our dealers have been able in a few situations to quote prices as low as $800 per dwelling unit.

"I believe it is now safe to say that the heat pump has become fully competitive in initial cost with conventional heating and cooling. As to operating expense, it has been competitive for some time in certain areas," Gray declared.

What Home Owner Should Get In Way of Comfort

"Turning now to my second point, let's look at the question of precisely what you should get in the way of comfort for the money you put out. I think that most Americans at this point are inclined to throw up their hands, accept the lowest bid and hope for the best. As I indicated, one of the things with which we are deeply concerned is the bad state of residential heating. For all the talk of 'soft living' it is surprising how much wintertime discomfort and annoyance people are willing to endure.

"It is not necessary to be uncomfortable. And it is really very simple to make sure the dollars you spend are getting you good heating or good year-round air conditioning," he said.

"Do you suffer from cold feet on those long winter evenings? There's a simple reason for it—too great a difference between the temperature at the floor and higher up in the room. You can test it yourself with an ordinary thermometer. The mercury should not rise more than 2° between floor and breathing level. If it does, the trouble is probably stratification of the air.

"In a house with warm air heat the reason is either that too little air is brought into the room or it doesn't circulate properly when it gets there. The cause may be too small a furnace or duct, improper placement of the outlet, or improper adjustment of furnace blower and controls. If you're replacing a heating system, discuss it with your dealer while he is laying out the new one. If it's in a house you're planning to buy, make the builder fix it before you sign the purchase agreement, or look for another," Gray suggested.

"There's another problem quite common in poor system design. Do you feel chilly when sitting near a window or exterior wall but quite comfortable elsewhere in the room. It is not a law of nature that closeness to the winter outside must make you uncomfortable. But air from the furnace coming into the room should sweep the wall to warm it up and keep it from stealing heat from you. Perimeter outlets are a good answer. Discuss this also with your dealer.

"Perhaps you notice differences in temperature as you move from room to room. Your thermometer should not change more than 2°. If it does, either the ducts to your cooler rooms are not large enough, the outlets in all rooms are improperly adjusted, or the controlling thermostat is poorly located. You'd better consider these items as you finalize your system selection," Gray declared.

Noise Is One of Most Insidious Problems

"One of the most insidious problems is noise. A cause may be that the furnace is too small. That's what you're likely to get if you try to undercut the price range mentioned. The smaller the furnace fan, the faster it must turn to circulate the air required, and the faster it turns the more noise. It may sound odd to tell the dealer, 'I want a furnace with a big fan,' but that's exactly what you should say. Be sure also that he understands how to suppress noise through the design and installation of ductwork.

"Do you feel a draft? Your outlets need adjustment or they are improperly located. Do you have sudden flashes of chills and fever? It's not malaria; your controls need fixing. Your thermostat may have the jitters and keep turning on and off. The operating temperature of the heating plant may be set too high. Or strange as it may seem, the furnace may simply be turning out more heat than necessary and need throttling of the fuel line," Gray pointed out.

"This brings me to something that applies in both heating and cooling. No matter how perfect the design of the system, it always needs adjustment after installation. One or two visits should do the job. But be sure the agreement with the dealer includes this. He will call it 'balancing' the system.

"Now, obviously, some of these things will cost more money. But $50 to $100 isn't much when considered against a probable system life of 20 years. In fact the larger expense would mean less than two cents a day. Americans are shrewd buyers when they have the information to work with, and they enjoy purchasing intelligently. If these few simple notions about heating are conveyed to them, I think we may help a lot of people be happier and perhaps even healthier from October through March each year," Gray believes.

"A lot of people have asked: 'What should we do to prepare our homes for the future installation of air conditioning?' One requirement is electricity. You should have a minimum of a 100-ampere service with provision for 230 volts.

"The main points to consider relate to the heating system.

(Concluded on next page)

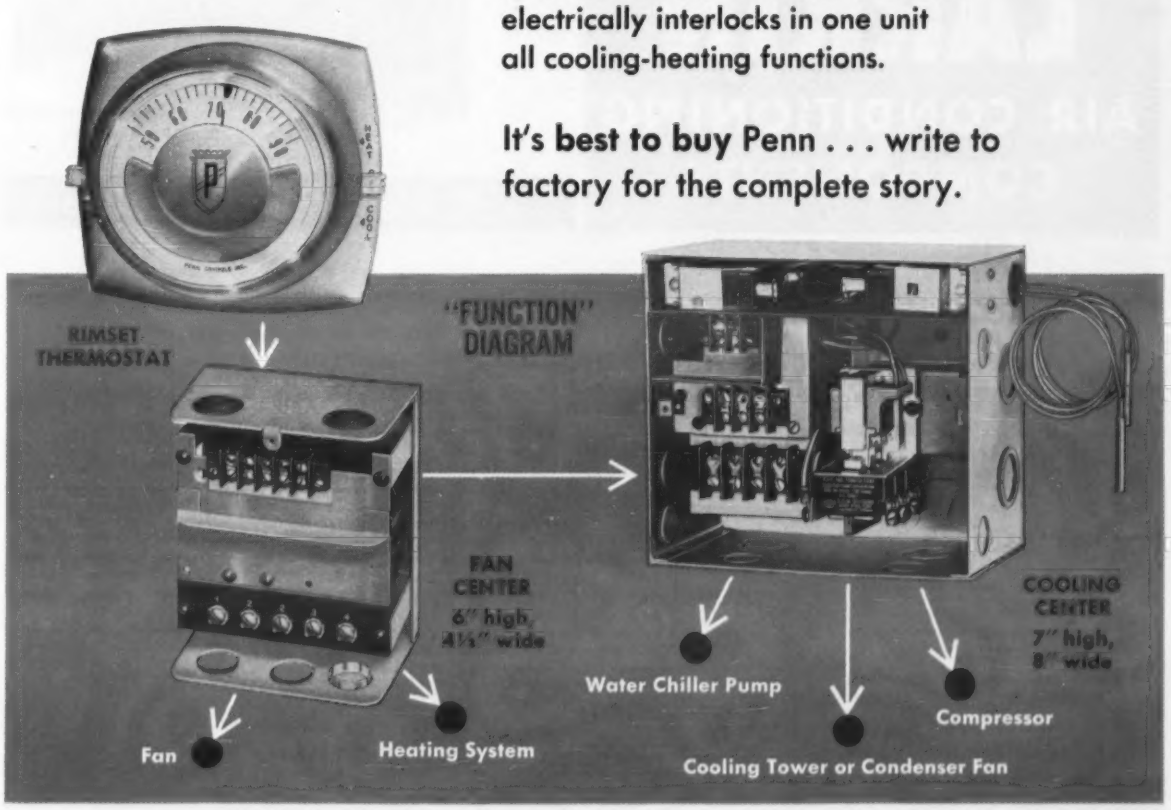
NOW...A BETTER WAY to control air conditioning!

For all residential air conditioning with remote condensing units . . . you can do the job better and more simply with these three versatile Penn controls.

RIMSET thermostat . . . with its interchangeable sub-bases . . . handles 12 different cooling and heating jobs. FAN and COOLING CENTERS . . . with their factory-wired internal circuits . . . are compact and save installation time.

For self-contained air conditioning systems, the Penn SYSTEM CENTER electrically interlocks in one unit all cooling-heating functions.

It's best to buy Penn . . . write to factory for the complete story.



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AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Cooling Costs--

(Continued from preceding page)

The furnace and the ductwork must have enough air handling capacity for summer conditioning. To assure this, have your contractor make an estimate of cooling requirements. There should be a box or plenum attached to the duct system where a cooling coil or unit can easily be inserted. Every time a pair of shears touches sheet metal later to open up a duct, it will cost money.

"It will simplify things if the furnace is placed at some fairly central location near an exterior wall or window to permit easy connection with the part of the cooling unit which must be outside. Finally, the thermostat and control wiring should operate both heating and cooling.

"It may take an extra $50 to install a heating system prepared in this fashion for inclusion of cooling. But it will save you $150 or more later on when you obtain complete air conditioning," Gray said.

"Essentially the requirements of a good winter air conditioning system as to even control of temperature and quietness apply also to summer operation. Here are some additional pieces of advice when you expand your system from one that takes care of winter needs only to one that also handles warmer weather requirements:

"1. Be sure a room-by-room estimate of cooling needs is made. No one can hope to control temperature efficiently unless the requirements of each room are known.

"2. Ask for a comfort guarantee. The air conditioning industry in its bids traditionally has specified not only the equipment to be provided but the conditions it will maintain.

"3. Check carefully the arrangements for service. Most residential air conditioners have warranties covering parts. You may want a service contract.

"Let's now compare air conditioning with other family expenses. So far, I have discussed the economics of indoor climate control solely in terms of first cost and operating cost. But this is not a true analysis of what these dollars mean to you in terms of use because it is not related to the period over which the system is used. We must earn our money year after year. We should consider our expenses in the same light," Gray explained.

"A central air conditioner built into a home loses little value by obsolescence, nor is it used up quickly. Given reasonable maintenance, it may have a life of 20 years or more.

"To give you a notion of the owning cost of air conditioning, a cooling unit priced at $500 included in a new home will add only $3.50 to your monthly payments on a 20-year FHA mortgage," he said.

"I'd like to set up a concept of owning and operating cost in personal expenditures related to period of use—just as a business would. We might call this use cost or consuming cost. Let's take a family and try to analyze this. In order to place them in the heartland of America, let's say they live in Terre Haute, Ind., which is only a few miles from the nation's geographical population center. *(See tabulation above.)*

"This family decided to add cooling to their winter air conditioning system. Since they were foresighted the installed price was $800. Capitalized on a 20-year basis, their owning cost is $80 a year including interest. Add maintenance of $25 yearly, and electricity to operate at $31 a season and the owning and operating expense becomes $136 a year," Gray said.

"Let's compare this with some of their other expenses. They trade in their car every three years. Assuming 20% depreciation and 5% interest their annual owning cost is $638. Add to this $12 for a license, $125 insurance, $100 maintenance, and $208 gasoline and oil, and the total owning and operating cost annually is $1,083.

"A 20-year, $14,000 FHA mortgage on their home costs them $1,181 a year. Another $224 for maintenance, operation, and improvement brings the total to $1,405 annually, not counting heating and cooling, light or other utilities, taxes, or insurance.

"People have asked: 'But isn't air conditioning expensive?' On the basis of comparative figures and of the testimony you have heard this morning, I'd like to turn the question around and ask, 'Can you afford to be without one of the best values on the market?' "

Annual Air Conditioning Cost Comparison for Typical Family*

(Based on owning and operating or "use" cost over period of normal equipment usage and on authoritative studies of family expenses. Climatic conditions from which air conditioning operating costs were determined are those which exist near the nation's geographical population center.)

	Items	Total
Car		$1,083
Owning cost assuming trade-in every three years, $3,000 first cost, 20% annual depreciation, 5% interest	$ 638	
License at $12, Insurance at $125	137	
Gas and oil $208, Maintenance $100	308	
House (excluding heating, cooling, utilities, taxes and insurance)		1,405
FHA, $14,000, 20-year mortgage	1,181	
Maintenance, operation and improvement	224	
Food		1,381
Television		53
Owning cost assuming 10-year use, $210 first cost, and 5% interest on investment	31	
Operating cost and maintenance	22	
Medical and Drugs		239
Tobacco		150
Alcoholic Beverages		125
Heating		235
Summer Air Conditioning		136
Owning cost assuming 20-year use, $800 first cost and 5% interest	80	
Maintenance $25, electricity for average cooling season $31	56	

* Characteristics of family: Age of homeowner, 35 years; three children; annual income, $7,500; size and cost of home, three bedrooms, 1,200 sq. ft. of living area, $18,000.

DAH for new systems in attic or crawl space

FP for furnace plenum

DAC for duct installation in hot air systems

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AIR CONDITIONING COMPONENTS

2, 3, 4 and 5-ton Capacities †

It's time to turn the sizzling home air-conditioning market into a piece of cool profit for yourself. One way to make that profit, and hold on to it, is to build custom systems with dependable LARKIN Air Conditioning Components.

Whether converting existing hot air systems, adding cooling to homes with wet heat, or installing year-round systems in new homes—it will pay you to use quality LARKIN products, priced to give you a competition advantage.

A HOST OF STRONG FEATURES

- Available in 2, 3, 4 and 5-ton capacities†
- Equipped with Larkin cross-fin coil, staggered copper tubing with aluminum fins UL approved
- Evaporator equipped with pressure-type distributor and external equalizer connection
- Insulated drain pan to prevent sweating
- Pre-punched holes for easy installation
- Cases of the DAH and DAC are fully insulated and finished in gray enamel
- The DAH is equipped with centrifugal fan, permanently lubricated motor and throw-away filters

BASIC RATINGS

Model	Capacity Btu/hr*	Cfm	Model	Capacity Btu/hr*	Cfm	Model	Capacity Btu/hr*	Cfm 0" SP
FP-2	25,600	800	DAC-2	25,100	800	DAH-2	24,800	950
FP-3	35,900	1200	DAC-3	37,300	1200	DAH-3	39,400	1375
FP-4	48,100	1600	DAC-4	48,960	1600	DAH-4	64,800	2180
FP-5	61,300	2000	DAC-5	61,200	2000			

†DAH is not available in 4-ton size

*Capacity based on 80° DB 67° WB entering air, 40°F suction temperature, R-12 or R-22 refrigerant.

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ATLANTA 1, GEORGIA

Drayer-Hanson Finds Church Cooling To Be Booming Field

LOS ANGELES — A leading publication in its field *Christian Life's* recently-completed survey among architects indicates "church building is the only phase of building, nationwide, that is booming today!"

Verification now comes from the far west where air conditioning manufacturer Drayer-Hanson reports sales-order department activity in this category at record level.

Last August, reporting church new construction and year-round air conditioning of existing structures constituted nearly 10% of Drayer's booked business, a spokesman for the company now indicates current figures to be much higher.

Cited are projects calling for system-type product from such diverse sections as Florida (Provisional church at Dundeen); Bellevue, Neb. (First Presbyterian church); and Zeeland, Mich., (3rd Reform church).

Also, the Monastery of St. Claire, St. Louis County, Mo.; Latter Day Saints church, Salt Lake City; and in California, among others Memorial Baptist church, Fresno.

An earlier D-H Fresno installation, requiring no structural changes in St. John's Cathedral (the city's largest parish), was noted by Rt. Rev. Msg. Francis X. Singleton, Rector, "as allowing us to have many more afternoon and evening weddings than we were previously able to do . . . because of comfort cooling."

Airtemp Promotes Robert A. Beam

DAYTON — Promotion of Robert A. Beam to branch manager for the Miami, Fla. factory branch of Airtemp Div., Chrysler Corp., has been announced here by F. J. Laughna, director of branch operations.

Laughna also announced the appointment of Hascal Simmons as branch operations specialist in Dayton.

Beam joined Chrysler Airtemp last year as a branch operations specialist, following three years with the General Electric Co. room air conditioner marketing department. Simmons served for 11 years with the Coleman Co. before joining Airtemp in February.

Ocean View Hospital To Get Air Conditioning

MYRTLE BEACH, S. C. — Plans for air conditioning the nearby Ocean View hospital at a cost of approximately $14,000 have been approved.

To get the project under way, the Myrtle Beach City Council made a $5,000 loan to the hospital.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich.
Only 25¢ each.

Space Age Interests Contractor, But He's Thinking of Ceiling Units, Not Satellites

FORT WORTH, Texas—There may be no ceiling on space for today's rocket engineers and statesmen, but it's space on the ceiling that intrigues a leading air conditioning contractor here.

R. S. Phillips, who heads Phillips Engineering Co., General Electric dealership, has devised an ingenious but relatively simple method of combining standard G-E components into a ceiling-suspended year-round air conditioner that greatly interests operators of supermarkets, drugstores, and occupants of crowded offices.

Not only does this combined unit save valuable floor space but it can improve year-round conditioning and provide zone control—all at a moderate cost.

Use of ceiling type air conditioners with remote condensing units is nothing new, Phillips would be the first to admit. The same applies to unit heaters, he indicates.

Combining a horizontal type gas furnace with an air conditioning coil, however, is something different.

"A much better heating system than provided by the conventional unit heater results from this arrangement, besides its having all the advantages of a ceiling type air conditioner," Phillips contends, and he has lots of customers who agree.

A standard attic type horizontal gas-fired furnace is used by Phillips for these jobs, along with a factory-built coil section (and remote air-cooled condensing unit) and a factory-built discharge plenum section.

In assembling the furnace, coil, and plenum sections together in his shop, he builds two transitions—one that connects the furnace to the coil and a second connecting the coil section to the plenum.

Use of condensate drain pumps is generally recommended by Phillips since they permit a better looking drain line installation than a gravity drain line would permit.

Individual thermostats are provided for each combination ceiling unit so that when an installation consists of two or more of these units, zoned control results, he also points out.

In many applications in the Fort Worth area the cooling load is considerably greater than the heating load. Also, in large buildings heating may be required only at the entrances or outside walls. This problem can be handled nicely with multiple installation of ceiling units, according to Phillips.

Several of his supermarket installations, for example, involve four ceiling-suspended air conditioners. Only two of these however, will be year-round units providing heating as well as cooling.

The two year-round units will be so located to provide heating (or cooling, of course) along the aisles nearest the windows and at the check-out stands and entrance sections. The ceiling unit over the meat department, for example, will provide air coditioning only and may very well operate frequently during winter.

it's the balance that counts . .

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Drymaster is engineered for today's modern refrigeration systems

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They'll Do It Every Time

by Jimmy Hatlo

I GOT A CHANCE FOR A JOB WITH ARSON & ANSIN---THEY WANT A RESUMÉ OF WHAT I'VE DONE--- WILL YOU TYPE IT UP? I'VE JOTTED DOWN ALL THE DATA--- "1956 TO '59--- ASSISTANT TO THE PRESIDENT, J.P. BIGDOME CO; 1955---NO--- BETTER SAY 1954 TO '56, SALES MANAGER, JUNIPER JELLYBEAN CO., IN CHARGE OF FOREIGN SALES---1950 TO 1954, SALES ENGINEER, BLOWOUT GASKET CO. ...."
GOOD OL' QRULLER--- THAT RESUMÉ WOULD MAKE A SWELL MOVIE--BUT IT AIN'T ANYTHIN' LIKE TRUE LIFE---
HE WAS IN THE SHIPPING DEPARTMENT AT JUNIPER--- THE ONLY FOREIGN DEAL HE EVER MADE WAS SELLING HALF A SWEEPSTAKES TICKET ....
"ASSISTANT TO J.P. BIGDOME"---HE HELD HIS THUMB ON THE CORD WHILE BIGDOME TIED UP A BOTTLE OF OL' GRAVEYARD ONCE ....
THE REASON HE'S MOVING IS BIGDOME CHECKED ON THE RESUMÉ QRULLER GAVE HIM!
LIE-DETECTING THE BUSINESS-LIFE STORY OF THE GUY TRYING FOR GREENER PASTURES ....
THANX AND A JUMBO HAT TIP TO R.P. RICHMOND, 73 E. WHEELOCK ST. HANOVER, N.H.
JIMMY HATLO
3-4
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Practical vs. Theoretical Science As It Relates to Engineers

PENDULUMS of mass emotion in America tend to swing in extreme arcs.

For too many years, in this connection, our secondary education programs tended to stray away from math and science and languages.

Now it's all going the other way, to a point where the humanities, studies of culture and the arts, philosophy and sociology—preparation for good citizenship, in short—are being shunted aside.

That near mass hysteria, which gripped the nation after Sputnik, has sent shock tremors into college curricula, also. Even the engineering schools themselves—from M.I.T. through Purdue to Caltech—are feeling this radiation.

Emphasis in the engineering schools is shifting from practical abilities to "pure" research. This emotional wave undoubtedly will further stock our storehouse of scientific knowledge.

But, who will get necessary jobs done, if our colleges turn out "pure" scientists rather than engineers? Can't a more realistic balance between our nation's needs be achieved?

Let's take the engineering college of the University of Illinois, for example. For nearly three decades this engineering school has been noted especially for its work in heating, ventilation, air conditioning, and refrigeration.

Industry research programs—sponsored by NWAHA, IBR, ASHAE, NAPRE, and such—have been centered there for nearly 30 years.

As a natural result, there are far more graduates of the University of Illinois in these related industries than hail from any other Alma Maters.

Currently there is doubt that this felicitous affair between a great university and a mighty industry has promise of lasting more than, say, half a dozen years, however. Because:

Courses in heating, ventilating, and refrigeration no longer are *required* subjects for engineering students there.

Thus this bastion of our industry falls in line with current practice at other engineering schools.

True, the caliber of U. of I. instructors in these studies is so high that they remain popular "optional" courses among engineering students at the Champaign-Urbana campus.

Unless the policy is reversed, however, within the next ten years the flow of practical heating, ventilating, refrigeration, and air conditioning engineers from this university—which has supplied our needs so well for so long—probably will slow down, it is predicted by some.

And then where shall we turn for the practical talent our business requires to replenish itself?

Another straw-in-the-wind:

Two years ago University of Illinois people projected an admirably grandiose plan to investigate and formulate "the total effects of atmospheric environment on people, animals, and plants."

To be enlisted in this tremendously worthy cause were the faculties, research facilities, and graduate students of the Colleges of Engineering, Medicine, Agriculture, and Architecture on both the Urbana-Champaign and Chicago campuses of the University of Illinois.

All were to be coordinated in a truly major endeavor.

Nothing could have helped and advanced our industry more. What happened? Under Sputnik-type pressure the project has been slow to get under way.

Money which could have gone into it now is tending to funnel into atom-smashers, space chambers, and "pure research."

This particular university has done more for our industry, and probably will continue to do so, for several years to come (thanks to research appropriations from industry associations) than probably any other institution of higher learning in the world.

But a worthy program so vast as the Atmospheric Environment Research Project may need BIG money, such as only the Ford or Rockefeller foundations—or a state or national government—could provide.

Point we're trying to make is: our industry, and every other business which depends on practical application engineers, is bound to suffer if too many engineering college students are diverted into "pure" science.

Somebody (repeat) has to get the daily work-of-the-world done while waiting for research-into-the-future to pay off.

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'The Conscience of the Industry'

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NWAHACA WANTS TO GET TO 'GRASS ROOTS'

National Warm Air Heating & Air Conditioning Association
Editor:

Thanks very much for your excellent coverage of the Silver Shield Program in your March 2 editorial.

Perhaps Dale Mericle has discussed with you how we hope the Marketing Council will be recognized soon as a communications network for all segments of the Central Warm Air Heating and Air Conditioning Industry.

The Marketing Council consists of five committees. Each committee consists of manufacturers, wholesalers, contractors, trade press, and utility representatives. Communications-wise we believe we have a double-barrel job, namely to acquaint our industry with the programs we develop, and then use our industry in a concerted effort to apply our programs at the grass roots of our market.

Mr. Taubeneck, thanks again for the help you and Dale are giving our industry with its endless problem of communications with all segments.

ROBERT V MAIN,
Chairman,
Marketing Council

ACE SUGGESTED AS DESIGNATION OF MERGED SOCIETIES

Canadian Refrigeration & Air Conditioning
Toronto, Ont., Can.
Editor:

The suggestions for a shorter name for the "American Society of Heating, Refrigeration & Air-Conditioning Engineers" (A.S.-H.R.A.E.) is very interesting. I have a suggestion to offer for what it is worth.

Air conditioning amongst other things includes heating and cooling, so how about the "American Association of Air Conditioning Engineers" (A.C.E.).

"There is a tavern on York St., Toronto, with a neon sign out front which reads—

"ROOMS $3.00.

"LADIES AND ESCORTS."

This should prove that Toronto is a friendly city.

H. S. PARISH

Handy Way to Subscribe

To See the Industry In Action EVERY WEEK

Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING, HEATING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on residential, commercial, and industrial air conditioning, heating, and refrigeration for contractors, dealers, consulting engineers, distributors, servicemen, and manufacturers. Read the industry's only newspaper every week—you'll profit by it—only $6.00 per year, 52 issues (U.S. and Canada). Foreign: $10 per year.

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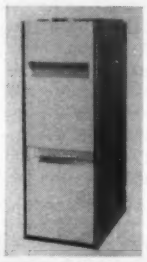
Heat Controller Re-Enters Forced Warm Air Field

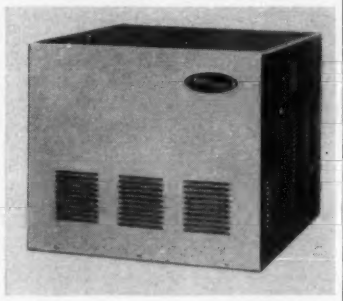
● Re-entry into the forced warm air furnace field with a new line of gas furnaces has been announced by Heat Controller, Inc., Dept. AH&RN, Losey at Wellworth, Jackson, Mich. The firm discontinued this type of product in 1955.



The new "Comfort-Aire" line includes hi-boy, counterflow, and horizontal furnaces from 80,000 to 160,000 B.t.u. per hour input, the announcement said. The line is AGA-approved for use with natural, manufactured, mixed, and LP gases, it was pointed out.

All furnaces have sectional heat exchangers, cast iron slotted burners, and draft diverters. Each furnace is fired and electrically tested on the company's production lines, according to Heat Controller.

The furnaces are available in standard and deluxe models. All blowers on standard models can be changed in the field to larger blowers for air conditioning.



Ross-Temp Ice Machines Feature New Principle

● New Ross-Temp automatic flaked ice machines that will be demonstrated at the National Restaurant Association exhibition May 11-14 in Chicago, include 150 and 250-lb. storage models, and 150, 250, and 500-lb. continuous flow machines, according to Ross-Temp, Inc., Dept. AH&RN, 1805 South 55th Ave., Chicago 50.

The latter can be used with large capacity auxiliary storage bin equipment. A mobile stainless steel bin model will also be shown, it was noted.

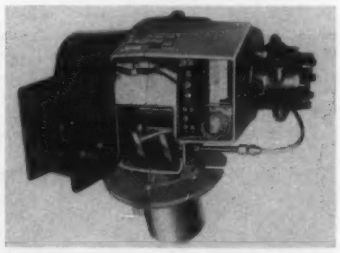
Features of Ross-Temp machines as cited by the manufacturer include "a new principle of making ice that results in a higher degree of operational efficiency, low boy design that permits use of storage models under counters, waist high bin, greater ease of maintenance, automatic shut-off when bin is full and return to operation when ice level is low."

Whirlpool Dehumidifier Features Humidistat

● A new "RCA Whirlpool" dehumidifier featuring humidistat control has been announced for 1959 by Whirlpool Corp., Dept. AH&RN, St. Joseph, Mich.

"A simple dial system permits the user to select the degree of humidity desired—from 20% to 80%," it was stated. "The unit, model ARI-10A, removes as much as 28 pints of moisture from the air in 24 hours in a room as large as 40 ft. by 30 ft. by 10 ft. while using little more electric current than a large light bulb."

Constructed on four swivel casters for easy portability to any room, the dehumidifier is designed for 115-volt operation. It requires less than 2 sq. ft. of floor space.



Nu-Way Oil Burner 'Completely Integrated'

● A "completely integrated" oil burner designed for use in OEM's residential furnace or boiler packages has been released by The Nu-Way Corp., Dept. AH&RN, Rock Island, Ill.

The new model FC oil burner, firing 0.50 to 4.50 g.p.h., can be completely factory-wired because primary safety relay and flame detector are in the burner.

Faster response to burner ignition and greater safety are claimed advantages.

Portable Vacuum Aids Furnace Cleaning

● Furnace cleaning—traditionally a spring and fall task—can be facilitated by the use of low-cost portable equipment and by balancing such service work throughout the year, according to Premier Co., Dept. AH&RN, 755 Woodlawn Ave., St. Paul 16.

"By carrying small, powerful vacuums on all emergency service calls, servicemen can often profit additionally by performing needed cleaning jobs at the same time."

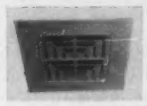
Premier has three vacuum machines designed for furnace cleaning (P-1009, P-908, P-950), but the unit recommended for convenience and efficiency in profitable servicing work is the P-950 "Spic-Span." Lightweight (28 lbs.) and easily transportable, the 950 is said to be powerful enough to clean any heating or cooling unit.

More details on the products described on this page may be obtained by writing the manufacturer at the address given in each story.

Powered by a ½-hp. motor, the P-950 operates from 115-volt, a.c./d.c. current. It has a suggested trade price of $112.50, with a kit of basic tools listed at $16.50. Accessory tools and special cleaning kits are also offered.

Grant Air Diffuser Has Adjustable Air Pattern

● A "versatile, compact" adjustable pattern air diffuser (patent pending) is introduced by Grant Air Products, Dept. AHRN, Box 143, Verona, N. J., it was announced recently.



Designed especially to serve the small tonnage air conditioning system, a single diffuser is adaptable to a two-way, three-way (shown), or four-way air distribution as dictated by job conditions, the company said.

The diffuser is available with or without volume control damper and is adaptable to independent vapor sealing during winter shutdown if desired.

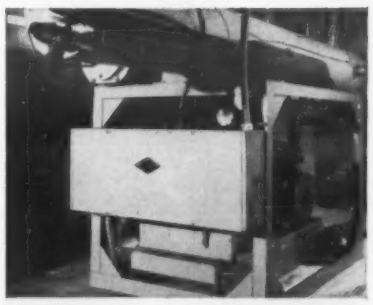
Presently available in the 8 in. by 8 in. size for the "attic" type air conditioner job, the diffuser will be available in other sizes in the near future, it was stated.

ANOTHER NATIONAL-U.S. SUCCESS STORY

NEW MOTOR LODGE HAS THREE-WAY TEMPERATURE CONTROLS FOR GUEST UNITS

Lobby of the new Howard Johnson Motor Lodge shows air conditioning outlets above passageway.

National-U.S. Supplies Hydronic Heating, Air Conditioning.

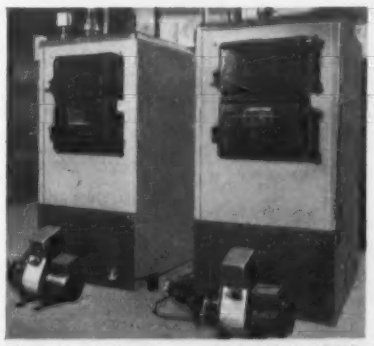


This is one of the two packaged water chillers that cool the Howard Johnson Motor Lodge.

Bedford, Pa.:—A new motor lodge, one of the first to be built to Howard Johnson's architectural design and specifications, is now open at the Breezewood Interchange of the Pennsylvania Turnpike, about 20 miles east of here. It is owned and operated by George R. Bortz and B. G. Studebaker, of this city, and features individual temperature control for each of the fifty units in the plan.

Each unit has a fan-coil distributor which blows air over a metal coil through which either hot water or a refrigerant can be circulated. And for supplementary heat, each bathroom has National-U. S. baseboard heating. Result is complete flexibility for selecting any desired temperature condition, winter or summer.

Main source of heat is a National-U. S. oil-fired "47" Series boiler. For cooling, a 15-ton and a 20-ton Capitol-aire Water Chiller, with companion 20 ton cooling tower was provided. And an assured supply of hot water for showers, faucet use and laundry is provided by two National-U. S. 060 Deepfire Hot Water Supply Boilers. One is primarily for stand-by use. Complete installation was the work of R. E. Hollis, Bedford plumbing and heating contractor.



These two boilers are made by National-U.S. especially to give plenty of faucet hot water.

All fifty motel units plus office and administrative space are kept comfortably warm with this large National-U.S. "47" Series Oil Fired Boiler.

For full information on all National-U.S. heating or air conditioning products, see our listing in the Yellow Pages of your phone book, or write:

National-U.S. Radiator CORPORATION
HEATING AND AIR CONDITIONING DIVISION
Johnstown, Pennsylvania

Heat Pump Will Need No Supplementary Heat Despite -10°F. Winter Design Temp.

By George M. Hanning

BENSENVILLE, Ill. — Largest air source heat pump installation in the world, capable of producing 628 tons of air conditioning and 5.6 million B.t.u.h. of heating, has gone into operation at the Flick-Reedy Corp.'s newly-opened 220,000-sq. ft. plant here.

Flick-Reedy will manufacture air and hydraulic cylinders and pipe thread seal fittings at its $2.3 million, ultra-modern, single-story plant. The plant is located just west of Chicago's O'Hare airport. York Div., Borg-Warner Corp., designed and installed the heat pump system.

Despite the fact that winter design temperature is -10° F., the big York system will maintain 70° F. in the plant without resort to supplemental heating devices, according to Frank Flick, president.

Instead a second stage of compression is used to supply added heat so that performance at -10° F. is as efficient as single stage compression at 15° F., he explained.

The second stage low pressure winter compressor pumps R-22 refrigerant from 2.7 p.s.i. (-35° F.) to 43 p.s.i. (20° F.) and the high pressure single-stage compressor pumps it from 43 p.s.i. to 229 p.s.i. (110° F.).

The single stage high pressure compressors (there are three in the system) handle the entire cooling load and mild heating loads. The booster compressors (also three) kick in when circulating water temperature drops below a predetermined point.

The $540,000 system is both practical and economical, Flick believes. By this arrangement, he said, the amount of heat produced is from 2.2 to 5 times as much as would be produced if electric strip heaters were used.

As compared with a fuel oil boiler for winter heating, costs of electricity are estimated at $7,200 per year and fuel oil at $12,000 per year.

"However," Flick admitted, "this apparent annual saving of $4,800 is wiped out when interest charges on investment, depreciation, and added service costs are taken into account.

"However, it must me remembered," he added, "that electric power costs have not risen as rapidly in the past as gas or fuel oil prices. Furthermore, atomic energy electric power plants of the future could reduce electric power costs materially."

Other plus factors leading to the installation included lower insurance rates because there is no combustion or high pressure heating in the plant, and savings of floor space over separate heating and cooling systems.

Because electricity is the sole source of fuel in the plant, Flick-Reedy gets a favorable average power rate of .7 cents per kwh for the heat pump itself or 1.1 cents over-all. This is not a special rate, he emphasized, but the result of quantity use rate reductions. Heat pump system itself utilizes more than 1,200 hp. in electric motors to prive pumps, compressors, and fans.

INSPECTING THE 628-ton York heat pump system, claimed to be the largest air source heat pump in the world, installed in the Flick-Reedy Corp. plant at Bensenville, Ill. are Frank Flick, president of Flick-Reedy, (l.), and Ray C. Ingersoll, chairman of Borg-Warner Corp.

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Emergency Power Source

By lucky happenstance, Flick noted, two main electrical feeder stations meet on company property. The utility has agreed to supply power to the plant from either station in case of failure at one station.

Another factor that has made the heat pump installation practical, according to William Divine, sales manager of York's heat pump division, is that heating load of the plant figures to 73% of the cooling load. To get maximum use out of the equipment, heating load must be less than cooling load, he explained.

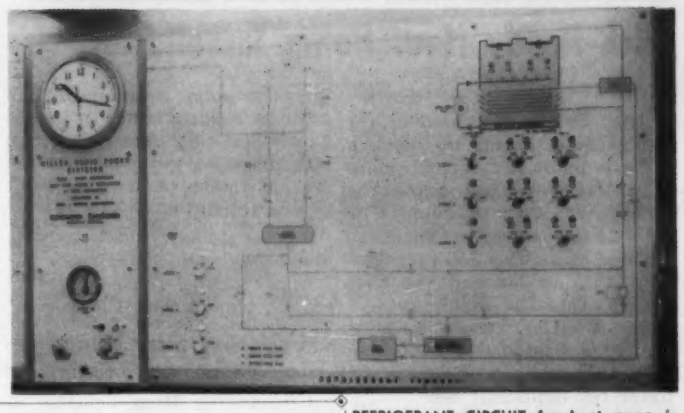
Mechanically, Flick-Reedy's system consists of three 200-ton interconnected York factory assembled heat pumps. They are grouped together in one corner of the plant, next to the main corridor dividing plant and office areas.

Equipment Location

Inside the building are compressors, cooler condensers, high pressure receivers, and Minneapolis-Honeywell supervisory data center. Outside are banks of five coils for each heat pump. Above each bank are two 44-in. axial flow fans each handling 43,000 c.f.m. of air.

The system provides 47° F. water for cooling and 105° F. water for heating to 15 air handling systems scattered throughout the building. Together they use 250,000 c.f.m. of inside and outside air.

Eight air handling systems serve separate bays in the factory area. One each serves factory locker room, solvent storage room, indoor swimming pool for employes and their families, pool locker room, dining-meeting hall, and general office. One system, with 16 zones, covers private offices and lobby.



REFRIGERANT CIRCUIT for heat pump is schematically traced on half of a Minneapolis-Honeywell Supervisory DataCenter mounted next to the equipment. From here, entire system can be controlled.

Twelve of the air handling units handle about 21,000 c.f.m. of air while three small ones handle 3,000 to 4,000 c.f.m.

Because low temperature water is used for heating, larger volumes of air are circulated that would be necessary with high temperature water. Yet, Flick commented, air handling systems are sized for cooling rather than heating. Velocity of air for the factory is kept as low as that of the office to eliminate drafts and blasts of hot or cool air, which are uncomfortable and cause colds, he noted.

An unusual feature of the installation is the fan room where the outdoor coils are located. This room is recessed into the factory area so that brick lattice work in line with the factory's outside wall screens the coils from view. The open brickwork provides plenty of air for the coils.

The room is completely bricked off from the factory itself except for an access door. Flick commented that the small sacrifice of floor space was more than balanced by the improved appearance of the building. Fans over the coil banks are in the roof structure where they present no objectionable appearance.

Coils Specially Designed

The coils, Divine noted, are specially designed for reverse cycle operation. They operate as a flooded evaporator during the heating cycle and as an evaporative condenser during the cooling cycle.

Fans are equipped with static pressure control that actuates the defrost cycle on the coils when ice accumulates sufficiently to reduce air flow.

Below the coils are rubber heating pads. During cold weather, when the defrosted ice drops to the floor in the fan room, the heating pads assure that condensate drains off and ice does not accumulate.

Earlier this year, before the plant started operations, snow drifting against the lattice wall created a small problem in getting air to the coils, But, Flick believes, that will not occur in the future. Cars filling the parking lot, and snow fences if need be, will prevent such drifting.

(Concluded on next page)

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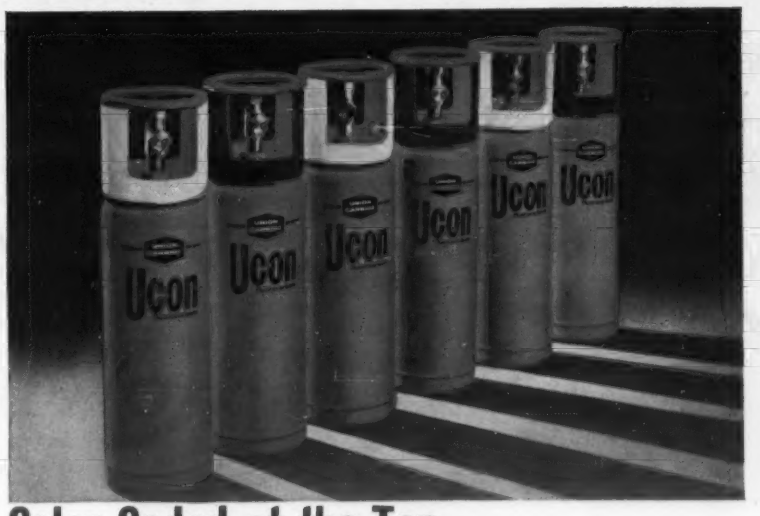

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Ucon Refrigerant 22 Monochlorodifluoromethane
Ucon Refrigerant 113 Trichlorotrifluoroethane
Ucon Refrigerant 114 Dichlorotetrafluoroethane

UNION CARBIDE CHEMICALS COMPANY
Division of Union Carbide Corporation

Flick-Reedy Heat Pump Installation

(Concluded from preceding page)

The 60 g.p.m. needed for make-up water on the cooling cycle is pumped from two man-made lagoons that grace the front lawn of the building. The lagoons are fed with rain water drained from the 750-car, five-acre parking lot and the five-acre roof of the building. Normal rainfall is expected to keep the lagoons filled. They will also provide more than 150 g.p.m. of water for industrial use.

As an added touch, Flick-Reedy is stocking the 95 by 500-ft. lagoons with game fish so employees will have their own private fishing site in summer. In winter, the lagoons will convert into an ice skating rink.

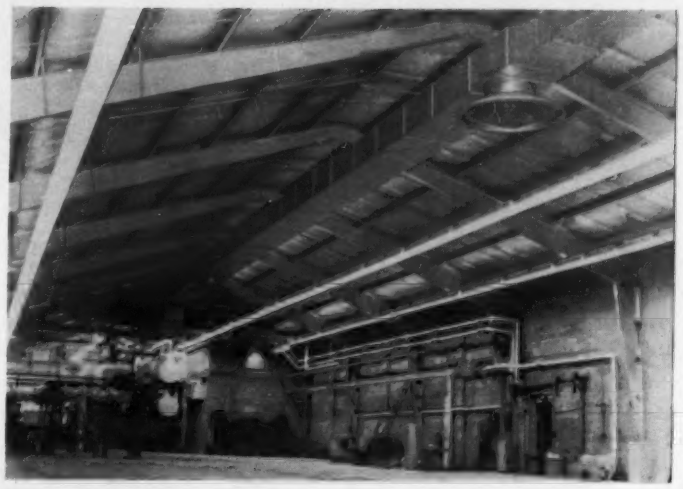
For the most economical operation of the heat pump, the system is sequenced so that one, two, or three of the high pressure stage compressors operate as needed. If still more capacity is needed, first one second stage compressor goes into operation, then a second, and finally, the third.

By so doing, Flick-Reedy is able to get a low horsepower per ton of cooling ratio for more than six months of the year.

Changeover from Heating To Cooling Automatic

Changeover from heating to cooling is done automatically by a Minneapolis-Honeywell reversing valve when outside temperature rises above 55° F.

While mechanical filters are used in all air handling systems, four employ Westinghouse "Precipitron" electrostatic filters for more thorough cleaning. Electrostatic filtering is applied to air supplied to the general office, private offices, dining-meeting hall, and to the plant inspection assembly department.



ONE of eight air handling systems in the factory area serves one of seven long bays. Mechanical equipment for the heat pump is seen at lower right.

Flick commented that by using the Precipitron, he will not have to wall off the inspection area.

Drayer-Hanson Notes High Percentage of Industrial Orders

LOS ANGELES — Current orderboard activity at Drayer-Hanson shows an unusually high percentage of the firm's air conditioning units flowing to various plant installations, particularly in California, the company reported.

Recent installations in the factory category include: a major air conditioning job at North American Aviation, El Segundo—a plant facility devoted to stainless steel brazing operations; continuing plant air conditioning at Rocketdyne, Canoga Park facility; the Hyperion Pumping Plant, El Segundo; Hughes Aircraft at Fullerton; and the Downey facility of North American Aviation, Autonetics; to name a few, it was stated.

Vulcan Laboratory Set To Test All Types of Equipment

HARTFORD, Conn. — Formal ceremonies dedicated the new product research and development laboratory of Vulcan Radiator Co. here.

The laboratory maintains facilities for testing residential, commercial, and industrial type finned tube radiation for hot water, steam, and electric resistance heating, ventilating, and air conditioning equipment and a separate chamber to be used for various types of air movement experiments.

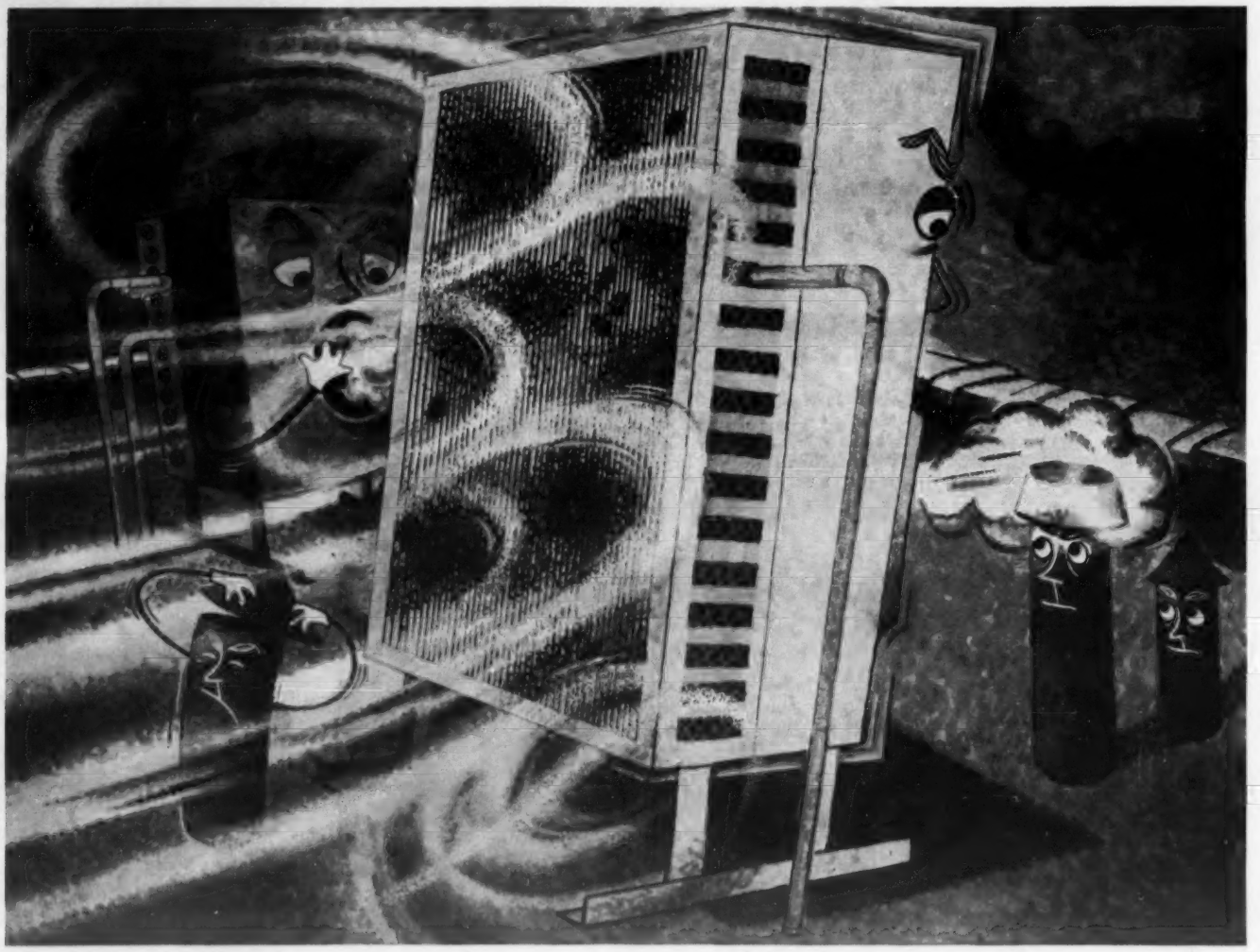
The main room of the laboratory contains permanently installed units of the Vulcan "Linoventilator System" for heating, ventilating, and cooling classrooms. Large window areas above the units simulate actual classroom conditions. Demonstration performance tests will provide "try before you specify" data.

Ilg Purchases General Blower

CHICAGO—Purchase of General Blower Co., Morton Grove, Ill., by Ilg Electric Ventilating Co. was announced by W. H. Rietz, Ilg president.

The newly-acquired company will be operated as the General Blower division of Ilg and will continue to manufacture industrial fans, turbo blowers, heat fans, and forced draft equipment. No change in personnel is contemplated.

"Products manufactured by General Blower will supplement our line of heating, ventilating, and air moving equipment," Rietz explained.



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All Halstead & Mitchell air-cooled condensers and finned coils come with fins spaced wide to prevent clogging. Their exclusive Turbu-Flo fin design keeps your maintenance costs down, and improves heat transfer up to 15%.

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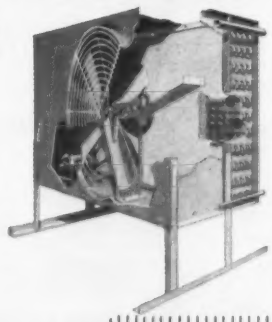
You can order H&M air-cooled condensers in capacities of 3 to 100 tons. Be sure to specify H&M finned products from your local distributor. Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.



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H 1.8	½"	1.8	90°
H 2.5	½"	2.5	100°
H 3	¾"	3.3	70°
H 5	¾"	5.0	85°
H 7	⅞"	7.0	100°

Send $1.00 for 3 trial nozzles
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Acre Service Expands For Second Time

DALLAS—Acre Service, specializing in manufacturer's warranty hermetic system repairs of room air conditioners and commercial and residential air conditioning systems, has expanded into new, larger facilities for a second time in Brook Hollow Industrial District.

G. M. DeJarlais, owner of Acre Service, announced the move into a 21,000-sq. ft. building at 8100 Ambassador Row. The company first moved to Brook Hollow in April, 1955, occupying a 10,000-sq. ft. building at 8205 Sovereign Row. In September of 1956, Acre doubled its size by building another 10,000-sq. ft. building at 8301 Sovereign Row.

DeJarlais said the company will continue to occupy the building at 8301 Sovereign Row, in addition to the new plant at 9100 Ambassador Row.

The new location will serve as the hermetic and compressor repair depot and local service branch for Acre, which operates in all of the southwestern states.

ScottFoam Filters For Air Conditioners Claim Renewability

CHESTER, Pa.—Scott Paper Co. recently released some details on its "ScottFoam" urethane foam which it said is being employed by Philco Corp. for the filters of that company's 1959 line of window air conditioning units.

Manufactured by Scott Paper as its first non-paper product, ScottFoam has a completely open-pore structure, the firm pointed out. It stressed that the product has a three-dimensional structure of skeletal strands.

The result, Scott Paper claims, is that ScottFoam "has higher porosity and 100% permeability. While possessing this very necessary property for filtration use, ScottFoam retains all the other desirable qualities of other urethane foams."

The manufacturer also pointed out that filters of ScottFoam "do not have to be replaced and can be used for the life of the air conditioning unit. They can be removed easily, washed like towelling in ordinary household detergent and hot water, and then re-installed."

It is also claimed that ScottFoam is not affected by high temperature and can be sterilized, if desired, in boiling water.

Scott Paper said ScottFoam is made in a full range of pore structures for filtration purposes.

Industrial Accoustics Opens West Coast Office

NEW YORK CITY — Industrial Acoustics Co., Inc. here, manufacturer of industrial and aviation noise control equipment, announced the opening of a West Coast office at 1532 Third St., Santa Monica, Calif.

Daniel B. Callaway, former chief engineer of the sound control department of the Koppers Co., will be in charge.

Alter's 'Dependabook' Gets First Complete Cover-to-Cover Revision

CHICAGO—For the first time in 23 years, the Harry Alter Co., national wholesale distributor of air conditioning and refrigeration supplies, has published a brand new "Dependabook" catalog, completely revised from cover to cover.

"A new, easier to read type face has been used and all merchandise has been carefully reorganized into conveniently located sections," the company said.

"Seventy-two new pages have been added and a new, compact page size used to make the catalog easier to handle and more complete than ever before. The new type patented binding allows the catalog to lay flat when opened to any page for quick reference."

Irving Alter, president, stated that the new Dependabook is the product of five months of work.

"We have built this catalog with just one objective — to make it as easy as possible for our customers to select the items they want, with a minimum of effort and time," he said.

"Careful consideration has been given to make certain that all specifications are complete and correct. In addition, many of the prices in the new book have been reduced and numerous new items have been added," Alter declared.

Because of certain economies in the printing of this new size and style Dependabook, the company announced that it will now be possible to publish the catalog at more frequent intervals "so that it will always be up-to-date with new prices and the latest merchandise."

Alter's Dependabook "has had a long history as a standard reference book for the refrigeration and air conditioning industry," it was stated. "Many of the engineering colleges and most of the refrigeration service schools around the country have made regular use of this catalog for teaching and reference purposes. The U. S. Government also uses the Dependabook for refrigeration specifications. In addition, the catalog is sent to trade sources in nearly every country in the world.

"Distribution of the Dependabook is handled by a sizeable department at the Harry Alter Co. and great care has always been taken to make certain that copies are sent to only bonafide sales and service firms. All inquiries and catalog requests are checked by a variety of methods for their trade qualifications. This constant culling of the tens of thousands of names on the company's mailing list is a year-round operation."

The company maintains extensive warehouses in Chicago, New York City, Dallas, and Atlanta.

Controls Co. Declares 2 Stock Dividends

SCHILLER PARK, Ill. — Directors of Controls Co. of America declared a quarterly dividend of 20 cents a share on the company's capital stock, payable April 6 to stockholders of record March 23, and in addition declared a stock dividend equivalent to 3% of common stock outstanding at the close of business March 23, payable May 1 to holders of record March 23.

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Now...cut costs, reduce inventories and *profit* more with the *one* standard insulation that fits every pipe and fitting, meets *every* service requirement!

THREE INSULATING BARRIERS in
NO Drip TAPE
1. OUTSIDE
Rough surface prevents free circulation of moisture-filled air—creates dead air barrier.
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Built-in moisture barrier assures utmost insulating efficiency.
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Dead air is trapped between "corrugated strands", forms added insulation barrier.

NoDrip Tape means more profit, less work on every job . . . saves you time, labor, material. NoDrip Tape eliminates most multiple wrappings needed with thinner wraps . . . inferior wraps.

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Next time an equipment cold line job calls for *permanent* protection against condensation drip, "sweating" or frost, insist on using NoDrip Tape. Stops rust and corrosion, too . . . holds temperatures more constant and increases the efficiency of the cooling equipment.

NoDrip Tape is pliable, cork-filled and completely self-adhering. Easy to work with . . . forms an air-tight, 100% vapor and moisture proof jacket. Needs no tools, vapor seals, fasteners, brads or adhesives.

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Complete Text of GSA's Study of Influence Of Air Conditioning on Work Production

GENERAL SERVICES ADMINISTRATION
Public Buildings Service
Office of Assistant Commissioner for Buildings Management

RESEARCH DIVISION TECHNICAL BULLETIN
PBR-161

INFLUENCE OF AIR CONDITIONING
ON WORK PRODUCTION

SUMMARY

A five-month study during the summer of 1957 by the Office of Buildings Management, General Services Administration, in cooperation with another Government agency, indicates that the work output of employes in air conditioned space is greater, on an average, by more than 9% than that of employes in similar space which is not air conditioned.

Introduction

Now that air conditioning has come to be regarded as a necessity by the public in general, building owners find themselves in the position of being forced to provide air conditioned space in order to hold their tenants.

Industry, searching for some way to justify the great expense of air conditioning, has tried to find proof that it increases both work production and accuracy, and that there is less absenteeism.

If such proof could be established, it would be possible to calculate the benefits of air conditioning in terms of dollars and cents, and to determine over what period of time the system would pay for itself through savings in employe salaries.

Numerous reports have appeared in technical papers, giving accounts of tests in which air conditioning is said to have increased productivity as much as 50%, but when these reports are more carefully analyzed it is generally found that other environmental changes (such as painting, providing higher light intensity and acoustical treatment, etc.) were made at the same time air conditioning was installed.

It is, therefore, considered fallacious to credit air conditioning with all the claimed benefits. This reasoning is in accord with the Hawthorne Report (published in 1927, and based upon exhaustive research) which showed, surprising as it might seem, that any change in working conditions, whether for better or worse, results in increased work production for at least a time.

Because of the role the General Services Administration plays as government landlord (we are responsible for maintaining and operating some 74,000,000 sq. ft. of government-owned space housing government activities), we share industry's anxiety to know the measurable benefits of air conditioning on work production, accuracy, and absenteeism.

Despite the great number of buildings under our supervision and the wide variety of work performed in them, we were, until recently, unable to find an activity suitable for testing the effects of air conditioning—one in which the same work is performed year after year, and where employe work output can be evaluated with some degree of accuracy.

Later in 1955, however, we found an operation in one of the government departments which we believed filled these requirements. The work performed there has not varied through the years. It consists of making great numbers of so-called "searches" (more than 100,000 each month), and each employe must complete a minimum quota.

The department not only gave consent to the test, but cooperated to the fullest by collecting the extensive data required.

Selection of Test And Control Areas

The building in which the test was conducted is a wing-type structure, with the head house in the center. The wings were of open construction, without definite corridors.

The west wing was selected as the test area, and the center wing as the control area. Both were principally occupied by file cabinets where the searches are performed.

All space was heated by direct radiation from radiators under the windows. Ventilation depended on opening the windows, which had all the usual disadvantages.

The lighting intensity was 4.3 watts per sq. ft., furnished by 500-watt semi-indirect incandescent luminaires. The walls were painted "Government buff."

Original Test Plans And Objectives

Originally it was planned to make a three-fold study:

1. It was intended to study for a two-year period the effect of air conditioning on production. Only insignificant environmental changes were to be made in the test and control areas during this phase of the study.

2. On completion of this two-year study it was planned to install "high intensity" lighting of about 100 footcandles in the test area, and to evaluate the additional effect.

3. Following the second phase of the study, it was intended to change the environmental colors in the test area and study this effect.

Revised (Final) Test Plan

When bids on the original plan were received, they exceeded available funds by a wide margin. Therefore parts two and three of the three-phase study were abandoned.

Under the revised plan, existing lighting and painting conditions in both areas were changed. Identical painting and lighting were provided so that, with the exception of air conditioning in the test area, all employes would be working under the same conditions.

The walls were painted a flat light green, and the ceilings flat white. The lighting fixtures were changed from semi-indirect incandescent to semi-indirect fluorescent.

Air Conditioning System

The air conditioning system installed for the test area was operated to hold a uniform temperature of 75° F. (±2°), and a relative humidity of not in excess of 50%.

The cooled and dehumidified primary (outside) air was supplied by an overhead supply duct, running approximately the full length of the wing, with a sidewall outlet per bay discharging toward the windows.

The sensible cooling or heating was accomplished by fan coil units located under each window. These units were supplied with chilled or hot water, depending on the season.

The east and west sides of the test area were controlled in groups by thermostats located near the center of the wing, while the radiators in the control area were hand controlled.

The amount of outdoor air supplied to the test area was 3,800 c.f.m. (.23 c.f.m. per sq. ft.).

Selection of Work Groups

To assure a true comparison between the effects of air conditioning on the productivity of the two test groups, only employes who were thoroughly experienced were selected to work on these test teams.

Each of the participating teams consisted of 70 persons, or 140 in all. The average age of the employes working in the air conditioned area was 21.25 years, varying between 18 and 33, while the average age of those in the non air conditioned space was 21.51 years, ranging between 19 and 32. An equal number of men and women participated on each team.

The testing period covered five months (May through September, 1957). During this time, due to marriage, military leave, promotions, reassignments, etc., the average number of employes in the test area dropped from 70 to 62.6, and in the control area to 62.2.

Work Done By Participating Organizations

The Office of Buildings Management, which is responsible for operating and maintaining the building, undertook the general coordination of the project and furnished the engineering, installed the new luminaires, and painted the areas.

The occupying agency collected the statistics on work rates, number of errors, and absenteeism.

Results of Study

A. **Increased Work Production:** Does air conditioning increase work production? The answer to this most important question definitely is "yes."

How much is the increase? On this point the study was not completely conclusive. Buildings Management had hoped to continue this test for at least two years, which would have been long enough to reveal an accurate measurement of the increased production.

But since performance of the particular task involved in this test serves as a stepping stone for the advancement of the employes, there is a considerably greater than average turnover of personnel.

As noted earlier, the number of employes participating dropped from 140 to 124.8 in the five-month test period, due to reassignments, marriages, etc. At this rate, the test and control groups would soon have dwindled to the point where the study would have become meaningless.

The records for the five-month test period show that the work production of the group in the air conditioned space varied all the way from 6.5% to 13.5% higher than that of the employes in the control area. Weather Bureau data for the period furnished no definite clues to this varied production curve. Neither could the occupying agency pinpoint the reason for this variation.

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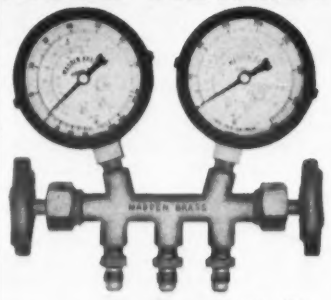

Pat. Pending

Designed for convenient charging, purging, testing etc., this new compact unit features an all brass forged body, easy-grip hand wheels, Teflon packing and seat for positive shut-off. Equipped with dual scale 2½-inch pressure and compound gauges. Hose connections ¼-inch male flare, gauge connections ⅛-inch female pipe thread.

HANDY HOSE HOLDER
Attaches to back of testing unit so free end of hoses can be conveniently coupled when not in use. Keeps them dry and free from dirt.

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Handy Tube Bender
Smoothly Bends any pipe or Tubing ⅜"-1⅛" O.D.

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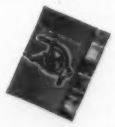


HOLSCLAW BROS., INC.
428 N. Willow Road • Evansville, Indiana

ever, that this difference is typical of employes working on this assignment, as it had been observed for many years that such employes' production varied from month to month by a few per cent.

The difference in time required to complete a search can vary a great deal, depending upon the case—one search may take hours, and another only a few minutes. Generally the total number of completed searches average out the same from month to month.

In the light of these observations it would seem logical that the employe's outside activities, which are a recognized factor in work production, were probably largely responsible for the variation in production.

Despite the "unknowns" in this study, the 9.5% average production increase in the air conditioned test area over the rate of production in the non-air conditioned control area is very significant. Frankly, it exceeded our fondest expectations. We know, from our previous studies, that a seven-minute saving in time per employe per day will more than pay for the expense of an air conditioning system. In other words, if work production increases only 1.5% per year, the system will pay for itself through savings in salaries. We feel certain that the increase in production will never drop below this value.

During the test period the best work production in the non-air conditioned area occurred in June and September; in the air conditioned area production was highest in June, July, and September.

The low point in the air conditioned space was in August, and probably was related to the outside weather (which was hot and humid), to which the employes were subjected during off-duty hours.

If it were possible to run a test under controlled laboratory conditions, the reason for these differences in productivity might be found.

B. **Decrease In Errors:**

In some months more errors were made in the air conditioned area than in the non-air conditioned. There was an average 0.9% increase in errors per person per month in the control area—a figure which is for all practical purposes identical with the average in the test area and does not permit reaching any definite conclusions.

In this particular operation, accuracy is more important than production. If an employe has an abnormal number of errors per year he is reassigned to less exacting duties, so it is safe to assume that all employes keep their errors to a minimum and that the percentage of errors, regardless of working conditions, is fairly constant.

C. **Decrease In Absenteeism:**

Accurate records were kept of all sick leave taken and its causes. All absences positively not associated in any way with air conditioning or the lack of it (fractured bones, operations, abcesses, skin rashes, bronchitis, etc.) were disregarded for purposes of this survey.

This left only minor ailments such as headaches, upset stomach, etc., to be considered.

While we suggest that no definite conclusions be drawn from this test, it is interesting to note that in the non-air conditioned area the absenteeism was 2.5% higher than in the air conditioned space.

This is the more astounding considering that the groups mixed with each other and strangers at lunch time, rest periods, in stores, on streets, and in public conveyances for the major portion of the day, and therefore were exposed to all kinds of diseases prevailing in the community.

D. **Intangible Effects:**

It was interesting to talk to people in the air conditioned area and hear their reasons for liking to work there. All employes, with the exception of one girl, preferred to work in the air conditioned space and hoped they would not be transferred out of it.

The most important reasons for this preference, from their point of view, are listed below. No attempt has been made to list them in the order of their importance.

1. Considerably less consumption of chilled drinking water. (This is a factor which may be worthwhile for Buildings Management to pursue further, since a number of the buildings under our control have a population of over 10,000, and some as high as 30,000. A small saving in drinking water per person might mean a considerable saving in installation and operating costs.)

2. The girls were pleased with the noticeable saving in money on "make-up" and "hairdos," attributed to the absence of electric fans and relief from the high humidity which prevails in Washington. It not only saved them money, it boosted their morale to know they still looked their best at the end of a busy day. The money saved was a very important item to these employes.

3. Elimination of wall fans was appreciated by employes for still another reason. No matter where fans used to be placed, there was always disagreement among the employes about where they should be located, and there were complaints about the noise and the blowing of papers on the cabinets.

4. Less soiling of clothing. All employes, both male and female, agreed that their clothing remained cleaner and fresher, and showed less staining due to perspiration and discoloration due to dirt. Many felt they could wear their day clothing to a social function that same night.

5. The majority felt that the heat after working hours did not affect them as much as formerly, when they were subjected to it all day.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

On these pages appears the complete text of the General Services Administration study on the effect of air conditioning on employe efficiency. Front page story in the April 27 issue of the NEWS hailed the report as the biggest single piece of promotion yet produced to help publicize the advantages of air conditioning in offices and industrial plants.

Conclusions

On the basis of the evidence, it would seem fair to conclude that the air conditioning resulted in:

1. A substantial average increase in work production (9.5%).
2. A slight decrease in errors (0.9%).
3. A measurable decrease in absenteeism (2.5%).
4. A measurable decrease in employe's living expenses (savings on cleaning bills, hairdos, make-up, etc.).
5. An important contribution to employe comfort and morale.

It is safe to assume that in any other type of office work, where the rate of production is not standardized, or where no minimum requirement must be met consistently, the increase in productivity will be more than enough to pay for air conditioning through savings in employe salaries.

We feel sure that despite other changes in environment made at the time air conditioning was installed (such as a new paint job and new lighting), the air conditioning should be given most, if not all, the credit for the increased work production.

The Office of Buildings Management hopes to continue this study to learn what other factors contribute to an increase in human efficiency.

F. R. Brant
Director, Research Division
Fred S. Poorman
Acting Assistant Commissioner
for Buildings Management

TORRINGTON CRACKS THE NOISE PROBLEM The squeeze toward compactness in room air conditioners has forced the decibel level up to the point that *noise is now the No. 1 problem.* ❙ In anticipation of this trend, two years ago Torrington's air impeller laboratories went to work on "noise." ❙ The result is the revolutionary Torrington H Wheel—one of the most important breakthroughs in air conditioning history. ❙ In one room air conditioner application test the H Wheel reduced the noise level from 63 to 53 decibels; and it was less than *one half as loud.* ❙ Torrington's engineering department is now offering samples of the H-Series Wheel for evaluation in your new product development program.
THE TORRINGTON MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO
1/2

TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Air Conditioning Start-Up Procedure

What the serviceman does and—equally important—what he fails to do during the spring air conditioning start-ups frequently determine whether he will have unprofitable callbacks on the system. His thoroughness at start-up also may determine whether he or someone else gets the service work from now on.

It is especially easy for the serviceman to ignore some basic items on units he has serviced for several years. So many times he trusts his memory to tell him whether service valves are open, whether fuse protection is correct, when a very few minutes could assure such things.

Each man has his own habit pattern, his own work routine in starting up a unit after the winter season. The total effect of such efforts, however, should always be the same—complete check and start of all major components and operations. A good start-up procedure should cover at least those points covered in the following discussion, for which we are chiefly indebted to Ken Bennett of Frigidaire's Detroit Training Center. (Ken is easily one of the most effective instructors I have encountered.)

1. COOLING COIL CLEANLINESS

Examination of the cooling coil should be thorough. A quick look at a few passes may miss some caked on dirt and sludge deeper in the unit. If mild cleaning is called for, a detergent solution will usually take care of the task. If heavy cleaning is needed, steam will handle it.

If steam is used, be sure all refrigerant is removed from the coil, that any ductwork is disconnected or baffled off. One experienced serviceman recalls turning the steam cleaning over to a cleaning outfit who neglected this last point. Steam traveled through the ductwork into the restaurant where the moisture condensed on the walls resulting in a dirt-streaked decor.

Steam in the ductwork may also saturate and damage any insulation.

2. FAN MOTOR AND BELT

The motor and bearings will naturally be lubricated with a recommended oil or grease. Follow the manufacturer's suggestions both on the lubricant used and on the technique of lubrication—to prevent over-oiling or over-greasing. Either the improper lubricant or too much of the correct lubricant can shorten the life of a bearing.

Normally, once-a-year lubrication is sufficient. Where the unit runs year-round, lubrication may be called for every three to six months.

3. AIR FILTER

The permanent type must be cleaned. If it is the wet type, it should be sprayed with a light coat of mineral oil or filter oil, lightly—on the inlet side. It is usually more practical to replace the replaceable filter.

On some equipment, it is possible to substitute a replaceable filter for a permanent one. On other equipment, this may not be possible since the filter may operate wet from condensate and a temporary filter will disintegrate.

4. CONDENSER

Whether operating on city water or on a cooling tower, clean all water screens in fittings and valves. All units should have screens; if they haven't, insert some. Check for rust and scale and remove before going into the cooling season, for these obviously can cause a high head pressure and excessive use of power and water.

A point of interest here is that older units with large (really oversized) shell-and-tube condensers can stand scale to a greater degree than newer units which use more efficient, better designed, but smaller condensers. On the newer equipment, even a thin layer of scale is significant.

It is advisable to remove all screens and some control valves from the system when active chemicals are being circulated to remove scale. The screens are removed to prevent their clogging with loosened chunks of debris and scale; the control valves are removed because some of their parts may be affected by the chemicals in the cleaner.

Chemical treatment will vary according to geography and even according to specific installation in the same locality. Find a reputable representative of a chemical company and follow recommendations for the specific cleaning job.

In the case of cooling towers or evaporative condensers, the tower must be cleaned—nozzles, deck surfaces, sump. Refill and check the float valve. Check the bleed rate, keeping in mind that it is better to have too much than too little bleed.

Bleed rate must be determined on the job. There is no standard percentage which will apply universally.

Check the tower pump for pressure and g.p.m. delivery. Check the blower and motor, being sure to clean the fan blades or blower wheels since dirt on these can materially reduce their air-moving efficiency.

Apply water treatment where it is called for. Remember that because the fact that the unit had water treatment last year does not do away with the need for cleaning and checking this year in most cases.

5. OPERATE UNIT AND CHECK CONTROLS

After making sure that all service valves are open and the fuses are proper size, start the unit and check the operating pressures—after unit has run long enough to reach equilibrium.

Check refrigerant charge and/or check for leaks. On some belt-driven jobs which have been pumped down, remember that the seals will leak momentarily until they are wetted again. Don't undertake a major repair because a partially dry seal leaks immediately on start-up.

Determine oil level and pressure. It might be well to do this right after start-up.

Check out controls—hi-lo cutout, safety, electrical.

You Asked About It

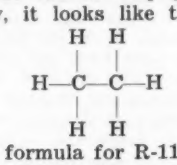
Q. The chemical formula for Refrigerant-113 is a dual formula, CCl_2F:$CClF_2$. From this I get Refrigerant-21 and 22. Does this mean that there are two gases used to produce Refrigerant-113? Why not use the formula $C_2Cl_3F_3$?

W.M.P.—Wichita Falls, Texas

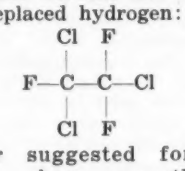
You are to be complimented upon the thoroughness with which you have studied the chemistry of refrigerants.

First, get clear in your mind that the two halves of the formula for 113 are not the same as 21 and 22. R-22, for example, is $CHClF_2$; the last half of the 113 formula is just $CClF_2$—without the H.

The real point is that this refrigerant is made from **ethane,** not from **methane** like the more common refrigerants. The formula for ethane is C_2H_6. Structurally, it looks like this:



The formula for R-113 shows where the chlorine and fluorine have replaced hydrogen:



Your suggested formula, $C_2Cl_3F_3$, shows correctly the total number of each atom, but it does not indicate that the original material was ethane, as it must since there are other chemicals which have two carbons in them also.

Briefly, then, R-113 is not made from a mixture of other refrigerants, but is made from ethane in the same way that R-12 is made from methane.

NEMA Establishes Standing Committee On Public Relations

NEW YORK CITY—The National Electrical Manufacturers Association announced that it has concluded a year of study of its responsibilities to its membership and the electrical industry by establishing a standing Public Relations Committee.

The committee is to work toward improving internal association communications and its relations with allied "customer" groups.

Members of the committee were announced as follows by Joseph F. Miller, NEMA managing director:

Donald Jensen, chairman, director of public relations, Square D Co.; K. W. Haagensen, director of public relations, Allis-Chalmers Mfg. Co.; Dale McFeatters, vice president, information services, Westinghouse Electric Corp.; Ralston B. Reid, manager, advertising and sales promotion, General Electric Co.; and R. H. Smith, secretary, Reliance Electric & Engineering Co.

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FANTABULOUS
ALL NEW COMBINATION HEX WRENCH AND PHILLIPS TYPE SCREWDRIVER SET
Featuring: SEVEN EXTRA LONG (9") HEX WRENCHES
Specially designed to allow the user to reach any remote set screw, this set consists of seven extra long (9") hex wrenches in popular sizes and three Phillips type screwdriver tips #1, #2 and #3.
PART NO. P-11
A—Illustrates operation of Hex wrench
B—Illustrates operation of Screwdriver
U.S. PAT PEND.
NEW INNOVATION
To facilitate the use of this tool, a sliding hex adapter is included as part of each wrench. A standard refrigeration ratchet wrench or any ½" wrench may be used on the adapter to quickly tighten or loosen the screw. This sliding adapter also enables the user to keep as close to his work as is desirable.
The Phillip type screwdriver tips may be snapped on one end of the ¼" hex wrench. A knurled plastic knob fits on the opposite end of the wrench for easier operation. The ¼" end of your ratchet wrench may be used in conjunction with this arrangement to provide a sliding ratcheting action.
Made of fine tempered chrome vanadium steel, this new tool is plated and finished to resist corrosion and is conveniently packaged in a heavy plastic pouch.
Send for 1959 Catalog–Dept. N-5
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DOES YOUR APPLIANCE CARRY THIS Seal of Quality?
The motor used in this equipment is protected against overloads, low voltage, over-voltage with a Mighty Mite Thermal Protector
MECHANICAL INDUSTRIES PRODUCTION CO.
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WABASH Silver Solder Flux
Wabash Silver Solder Flux is the perfect solution to silver soldering problems. Less fumes, glare, irritation to the skin; and increased capillary action of solder mean faster, easier, and more satisfactory results.
Four-ounce size shown comes complete with handy applicator brush in cap. Also available without brush in eight-ounce and one-pound sizes.
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G-E 'Frost-Guard' Freezer Claimed To Prevent Frost on Packages, Shelves

NEW YORK CITY—General Electric Co. announced at a press meeting here that leading its 1959 food freezer line is a new "Frost-Guard" freezer that "completely eliminates frost coatings on food packages, walls, and shelves."

The company said the freezer automatically defrosts itself every 24 hours.

"Basic to the operation of the Frost-Guard freezer is a powerful blower that keeps a flow of freezing air circulating throughout the freezer, penetrating to the heart of every food package," it was explained. "Packages are never frozen to the shelves or to each other. Their labels are always clear and legible."

G-E "Frost-Guard" Freezer.

The Frost-Guard's freezing system "adjusts itself to the food load," according to G-E. When food packages brought from the store are placed in the freezer, "the system will automatically operate continuously until the food is frozen. Then it will return to its normal cycle."

An alarm light shuts off to warn of current failure, or if safe storage temperature is not maintained.

Like all the food freezers in General Electric's 1959 line, the Frost-Guard is of the upright, "book-shelf" type.

Capacity of the Frost-Guard is 438 lbs., with the door alone holding 82 lbs. For large, bulky packages there is a basket that holds 76 lbs., and that swings out for easy loading or unloading.

Capacity of other food freezers in the G-E 1959 line ranges from 357 to 630 lbs.

"Straight-line design, with no protruding coils on the back, makes it possible to install the models flush against the wall and in line with base cabinets and other appliances," the company said. "Even with the freezer's hinge side flush against a side wall, the door can be opened to a 90° angle."

Uses Ad To Answer Most Asked Questions About Air Conditioning

WASHINGTON, D. C.—"The Most-Asked Questions About Air Conditioning" is the theme of the local Electric Institute's advertisements appearing in the three metropolitan newspapers.

Ads were scheduled for the *Times Herald* (Sunday, May 3); the *Evening Star* (Wednesday, May 6); and the *Daily News* (Friday, May 8). Text of the ads covers room units, add-on units, attic type, and electric heat pump. Dealers and air conditioning contractors were urged to run product tie-in ads.

Los Angeles To Get 'Silver Shield' Presentation May 7

LOS ANGELES—The "Silver Shield Program" will be presented to the Institute of Heating & Air Conditioning Industries here by Randall A. Nelson, public relations director of National Warm Air Heating & Air Conditioning Association, on Thursday, May 7, at Carolina Pines restaurant, 7315 Melrose Ave.

Cliff Conatser, institute president, said there is a great deal of interest in the Silver Shield program in Los Angeles and this is a general meeting of all contractors in the industry.

No Change In Address

BHC Moves Into New, Larger Quarters

NEW YORK CITY—The national Better-Heating-Cooling Council has moved to larger quarters at 250 Park Ave. here, the same address the organization has maintained since its founding in 1956, it was announced recently.

Also announced was the appointment of Roy A. Bredholt as director of field services.

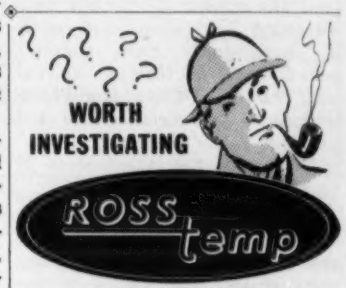
The council conducts promotional and educational programs to inform consumers, builders, and others about the advances and advantages of hydronic heating-cooling equipment.

It also operates an information service for magazine and newspaper editors and cooperates in promotional programs with affiliated Better Heating-Cooling Councils in Cleveland, Milwaukee, Philadelphia, Chicago, and in the Greater New York area.

New programs which have been launched to keep ahead of the industry's growing markets and increasing local council operations necessitated the move to larger offices, the national council reported. The council said the move also provides new facilities for expanded services to editors.

In his new position, Bredholt will direct distribution of BHC promotional materials and services and coordinate the activities of the BHC local council organization, acting as liaison between the national and local councils.

Bredholt has had nine years of experience in sales, advertising, and trade association work in the automobile field where he worked with dealers. He replaces Warren Owens, who resigned to form his own public relations firm.



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Let us show you how you can sell your customers who need 100 to 500 pounds of Flaked Ice daily.

Write for information and demonstration details.

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Subsidiary: Schneider Metal Manufacturing Co.
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On Display at... Chicago, May 12-14 Booth D-282

NRA SHOW

Imperial Forms Canadian Subsidiary

CHICAGO — The board of directors of The Imperial Brass Mfg. Co. has announced the formation of a new Canadian subsidiary, Imperial Brass Mfg. Co. (Canada) Ltd., with headquarters at 18 Hook Ave., Toronto.

John A. Grant has been named president of the new company; William C. Musham, vice president; F. C. Shafer, secretary.

Grant is president of Grant Brothers Sales Ltd., Toronto, president of Automotive National Distributors Association, and a director of the Canadian Importers and Traders Association.

Musham is president of The Imperial Brass Mfg. Co. and F. C. Shafer is chairman of the board of this company.

"The Canadian company will have full responsibility for handling Imperial's growing Canadian business on fluid transmission components such as tube couplings and valves, also tubing tools and automotive and refrigeration replacement parts and tools," it was stated.

The new Canadian company will be the basis for Imperial's further development and manufacturing in Canada.

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5-4-59

Air Conditioning, Heating & Refrigeration News
450 W. Fort Street
Detroit 26, Michigan

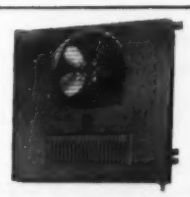
Freeze Ground To Sink Production Shaft

ESTERHAZY, Sask., Can.—International Minerals & Chemicals Corp. (Canada) Ltd. announced that in order to continue sinking its production shaft through the Blairmore formation of sand and water, it would freeze the entire section around the shaft.

A freeze station was nearing completion at the 1,200-ft. horizon at the firm's potash property near here.

There is Built-In Satisfaction in The Complete PEERLESS Line

For every type of refrigeration application there is a Peerless Product. Many have exclusive features of design and construction responsible for a high constant B.T.U. capacity rate and greater ease in installation.


MULLION UNIT COOLER

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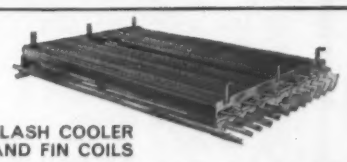
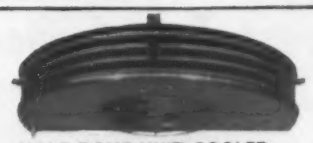
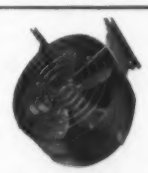
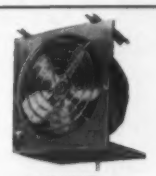
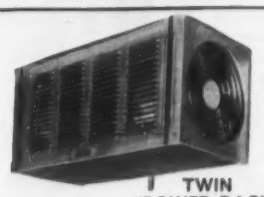
SLOPE FRONT UNIT COOLER


FLASH COOLER AND FIN COILS


HALF DOME UNIT COOLER


STANDARD "POWER PACK" UNIT COOLER


DELUXE "POWER PACK" UNIT COOLER


TWIN "POWER PACK" UNIT COOLER

MANUFACTURERS: Send us blue prints of your evaporator and condenser requirements for quotation. ***Send for catalog and price list.***

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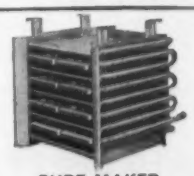
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Please send us your complete Refrigeration Catalog on Peerless Coils

Spur Electric Climate Control--

(Continued from Page 1)

that air conditioning, the heat pump, electrical space heating and other aspects of 'climate control' are, and will continue to be for many years, the catalysts in our load growth. This 'climate control' could well become our base load."

With surveys showing that by 1965, utilities in all but 17 states can expect peak demands in the summer, Wallace said that the growth of the air conditioning load alone can result in increasingly high summer peaks and decreasing annual load factor. Unless something is done to balance this load and achieve full "climate control" utilities will find themselves in trouble, the speaker said.

Wallace drew out an example of what would happen to the rate of return in a typical company if the load factor is improved by 10 percentage points, through embarking upon an aggressive "climate control" program of cooling and heating.

What Power Co. Gains

The results of this calculation show that a 10 percentage point improvement in load factor can increase per cent return from 5% to 6%; or, each one percentage point load factor improvement results in 1/10 of one percentage point increase in per cent return.

"More and more utilities are finding themselves with actual or potential substantial summer peak conditions because of summer air conditioning and other weather-related loads," said Wallace. "Such conditions should prompt a careful review of rate structures to assure satisfactory promotion of such heating load as will improve earnings which may deteriorate because of the low annual load factors caused by the summer seasonal load conditions.

"It can be of mutual benefit to the customer and the company to provide promotional features based upon load factor. The customer is entitled to these lower rate load factor benefits. Again let's emphasize that it is only *annual* load factor that materially affects the company's costs and consequent earnings situation.

"The present residential market is the 50 million residential and rural customers now being served. To date, only 1% of these customers have central heating and cooling or some form of 'climate control,' only 11% have installed room air conditioners, which leaves a balance of 88%, a very fertile field for cultivation and development.

"Not only is it a field that can be developed—it is a field that *must* be developed if we are to achieve the growth forecast and the growth the industry must have if we are to continue to progress. If the industry expects to have a continued rise in residential sales like that experienced in the postwar period, heating and cooling or 'climate control' must become a major portion of these sales.

"If we are to increase our residential sales in the future at the rate of the past, we will have to build this heating and cooling load at a more rapid rate. In 1959, with an estimated national average annual use of approximately 3,600 kwhr per residential customer, we find that heating and cooling accounts for one-fifteenth (1/15) of the residential use. In 1979, the 'climate control' segment of the residential load should amount to one-third (1/3). This is the job and the challenge facing us.

Witting's Observations

"At the recent Westinghouse 'Future Power Market Forum,' which many of you attended, C. J. Witting, vice president and general manager, Consumer Products Div., made these interesting observations in connection with the future residential market:

" 'The total residential load in 1978 is estimated to be 745 billion kwhr. Lighting will account for 28% of the total; prewar appliances 40%; appliances developed in the postwar period 9%; new products 10%; and electric cooling and heating 13%.'

"The significant part of this, however, lies in the fact that in 1968 lighting will account for 31%; prewar appliances 48%; postwar appliances 10%; new products 4%; and electric heating and cooling 6%.

"In only two categories are there percentage increases of growth between 1968 and 1978: new products 6% and electric heating and cooling 7%. Lighting, prewar appliances, and postwar appliances will show a decrease in the percentage they contribute to the total residential load.

KW Demand by Industrial Heat Pump

"Let's take a look at an industrial application that has 'climate control,' a garment plant heated and cooled by 50 tons of heat pumps. It is located in the 3,000 degree-day area.

"In 1958, this plant consumed 340,160 kwhr. Of that total, 153,520 kwhr were used by plant machinery and lights; 186,640 kwhr were used by the heat pumps in heating and cooling the plant. A total demand of 134 kw in January and 134 kw in August.

"One more example in the commercial office building field. A building is heated and cooled by a heat pump and is located in the 3,900 degree-day area. Total consumption for the year was 1,603,200 kwhr. Of this total, 729,920 kwhr were used by the heat pumps and ventilating equipment, and 873,280 kwhr by lighting and other building equipment.

"The kilowatt demands for this same building indicate that the load of the heat pumps is very nearly equal to the load of the other building services.

"I have referred to 'climate control' many times in this discussion and yet I have not mentioned a phase of this subject that really offers one of the greatest load-building potentials we could hope for. The use of air conditioning equipment in the average home today can be increased some 1,800 to 3,200 kilowatt-hours without adding a single kilowatt to the peak load—it's just like money in the bank. You may ask, 'How can this be accomplished?' It can be accomplished through humidity control.

"Most air conditioning units fail to control humidity during the moderate and cooler hours when, although it is humid, cooling is considered unnecessary. Not many heat pumps on the market today can adequately control humidity at night within reasonable limits.

"To adequately deal with this situation, a machine or device capable of running at a reduced capacity at night is needed, with the added feature of reheating the air to room temperature, if necessary.

Residential Load Gains

"What benefits can a utility expect to gain from a 'climate controlled' residence? I have taken an average $20,000 home in the 3,000 degree-day area and applied Georgia Power Co. rates. Here is what happens:

	Annual Revenue
1. Standard installation including lights, refrigerator, miscellaneous — 4,000 kwhr per year or	$ 85.56
2. All-electric, except heating and cooling, 7,500 kwhr per year, or	122.50
3. Same as No. 2, plus air conditioning, 10,000 kwhr per year, or	163.00
4. All-electric with heat pump, 15,000 kwhr per year, or	244.50
5. Same as No. 4 with humidity control, 18,000 kwhr per year, or .	293.40
6. All-electric home with air conditioning and resistance heating, 20,000 kwhr per year, or	326.00
7. Same as No. 6 with humidity control, 23,000 kwhr per year or .	374.90

"A total difference in revenue

Wallace: Educate.. Establish.. Encourage

Principal things the electric utility should do to promote year-round "electric" air conditioning as recommended by C. M. Wallace of Georgia Power Co. in his talk to the Edison Electric Institute:

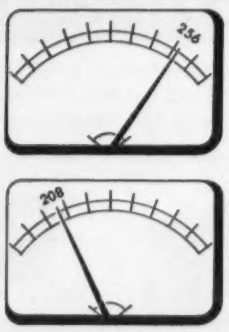
- Educate all employes at all levels, and encourage employe participation in promotional program by (1) helping to defray the cost of, and financing of, installation of a heat pump or electric resistance heating in a new *or* existing home of an employe; (2) offering cash or other incentive awards to employes who turn in prospect names that are sold the above-named types of equipment.
- Establish a favorable rate structure, if present rates do not place you in a favorable competitive position.
- Educate the architects, engineers, and contractors through meetings, personal contacts, and training schools.
- Take the responsibility of seeing that every all-electric or "climate controlled" home is properly designed, properly insulated, and properly installed.
- Encourage and develop a strong dealer organization—one that is able to sell, install, and above all, service the equipment he sells.
- Accept the responsibility for the service of "climate control" equipment (a) through contract to handle in-service-warranty with appliance repair personnel; (b) by servicing equipment when outside the guarantee at reasonable, yet profitable, rates; (c) through an independent service organization with the responsibility for assurance of adequate service resting with the utility.

When The Line Voltage Measures

Above Normal

or

Below Normal



Install an ACME ELECTRIC Buck and Boost Transformer

• Air conditioning equipment cannot function properly if connected to a supply circuit that is substantially below or in excess of the normal rating of the motor.

An air conditioning unit with a motor designed for 230 volts operation will lose torque, overheat or cycle off-and-on if operated from a circuit below the nameplate rating.

A Buck and Boost transformer connected to a 208 volt circuit and adjusted for a 10% boost will supply 228.8 volts which is entirely satisfactory for 230 volt motor operation.

If operated on excessively high voltage the motor will run hot, windings char and finally burn-out and the cost of consumed electric current will be higher than necessary.

To correct undervoltage or overvoltage conditions — install an Acme Electric Buck and Boost transformer. Write for catalog.

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over the standard basic installation of $207.84 per year with a heat pump and humidity control, or $289.34 per year with resistance heating and humidity control. In each case humidity control has added $48.90 annual revenue.

"If we agree," said Wallace, "that 'climate control' is desirable and profitable, what can we do to make sure that a program of 'climate control' will be a success? Here are a few ideas and suggestions:

What Utility Can Do

"1. Educate all employes at all levels.

"2. Encourage employe participation in promotional programs and in the use of 'climate control' equipment. For example, the Ohio Power Co. does this:

"(a) The company will defray $100 of the cost on behalf of any employe who purchases and installs a complete electric resistance home heating system in his *new* home; $150 of the cost if installed in an old home.

"(b) The company will finance the installation, including insulation, storm sash, and wiring, for a period of seven years.

"(c) The company will defray $300 of the cost of a heat pump installed in an employe's home. The heat pump will be financed for a period of eight years. In the case of a new home only the basic heat pump unit will be financed, but in the case of an old home the ductwork, insulation, storm sash, and electrical work will be financed. The employe finance rate is 3% per annum.

"(d) The company will present a $20 bill to every employe (some exceptions in managerial classifications) turning in a prospect card on a resistance heating or heat pump prospect who is ultimately sold and equipment installed. My company has recently adopted a similar plan but using cash prizes and trips to Nassau as the incentives. Sales department personnel are not eligible to compete.

"3. Tell the story of 'climate control' to college, high school, and youth groups (4-H, FFA, FHA, etc.). These are the homeowners of tomorrow. Remove the mystery of electric heating and cooling.

"4. Educate the architects, engineers, and contractors through meetings, personal contacts, and training schools.

"5. The utility should take the responsibility of seeing that every all-electric or 'climate controlled' home is properly designed, properly insulated, and properly installed. One dissatisfied customer in an area can do more to kill the sound programs we are trying to promote than all the competition we have or expect to have.

Establish Favorable Rate Structure

"6. Establish a favorable rate structure, if your present rates do not place you in a favorable competitive position. Do not, however, attempt to sell 'climate control' solely on the basis of price. We have something good to sell, something better than any other way of life. Sell the benefits. Keep in mind this fact, that for many years we have sold electric cookery in competition with lower-cost fuel and fuel-burning cook stoves.

"7. Sell your customer a package job. Get the heating and cooling business as a base, and the other electrical servants and services will follow.

"8. Develop a sales organization charged with the responsibility of selling 'climate control.' It should be the job of the utility to have trained sales engineers in the field who are not only able to recognize a heating and air conditioning prospect but who are capable of designing and recommending to the prospect a 'climate control' system that will be satisfactory. This requires sales personnel with an engineering background and training, and more training and still more training.

"We must have at our disposal the means by which we can offer our customers engineered heating, engineered cooling, and, if you please, engineered 'climate control.' Let's not give them anything else. Let's not give them the 'curbstone engineering' that is so prevalent today.

"9. Encourage and develop a strong dealer organization—one that is able to sell, install, and above all, service the equipment he sells.

"10. Last, but by no means least, accept the responsibility for the service to 'climate control' equipment:

"(a) Through contract to handle in-service-warranty with appliance repair personnel.

"(b) By servicing equipment when outside the guarantee at reasonable, yet profitable, rates.

"(c) Through an independent service organization with the responsibility for assurance of adequate service resting with the utility."

Heating & Cooling with Water

Results of Research over Past 18 Years Summarized In U. of Illinois Report

A cooperative research program in steam and water heating and summer cooling has been carried on at the University of Illinois since 1940. This program has been carried out under the terms of a cooperative contract between the Institute of Boiler & Radiator Manufacturers and the University of Illinois Engineering Experiment Station.

A summary outline of some of the results of the research has been compiled by W. S. Harris, M. D. Eide, and R. D. Barkman of the University of Illinois. Since this concise and informative material may prove useful to those involved in installations of this type of equipment, the summary is being published in a series of instalments which have been running intermittently since Oct. 6, 1958 in the NEWS. This is Part 8.

Operation with Open Bedroom Windows at Night

1. Object: To determine the effect on performance of opening bedroom windows at night.

2. Results:

a. After the warm-up period room air temperature differentials during the day were not affected by opening bedroom windows.

b. Operating with reduced thermostat setting and open bedroom windows at night, the morning warm-up time was much longer when the bedroom radiators were off at night than when the bedroom radiators were left on.

c. The daily fuel consumption obtained when bedroom windows were open and the thermostat setting was reduced at night was the same as that obtained when the windows were closed and the entire house was maintained at 72° F. at all times.

d. When bedroom windows were open at night, it made no difference in fuel consumption whether the bedroom radiators were turned off at night or not.

e. When operating with open bedroom windows at night some savings in fuel consumption could be obtained by adding weatherstrip to the bedroom doors and thus preventing the leakage of cold air from the bedrooms into other rooms.

Reduced Night Thermostat Setting

1. Object: To determine the effect of reduced thermostat setting on performance.

2. Results:

a. After the warm-up period, room-air temperature differentials during the day were not affected by reducing the thermostat setting at night.

b. Operating with reduced thermostat setting and open bedroom windows at night, the morning warm-up time was much longer when the bedroom radiators were turned off at night than when the bedroom radiators were left on.

c. Reducing the thermostat setting at night, but leaving all windows closed, resulted in a fuel savings of about 5%.

d. The daily fuel consumption obtained when bedroom windows were open and the thermostat setting was reduced at night was the same as that obtained when the windows were closed and the entire house was maintained at 72° F.

(To Be Continued)

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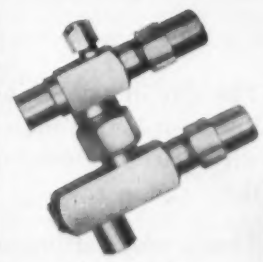
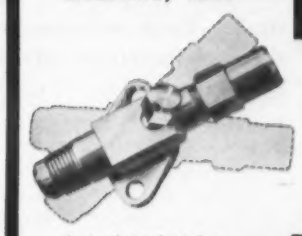


Break-Away Valve



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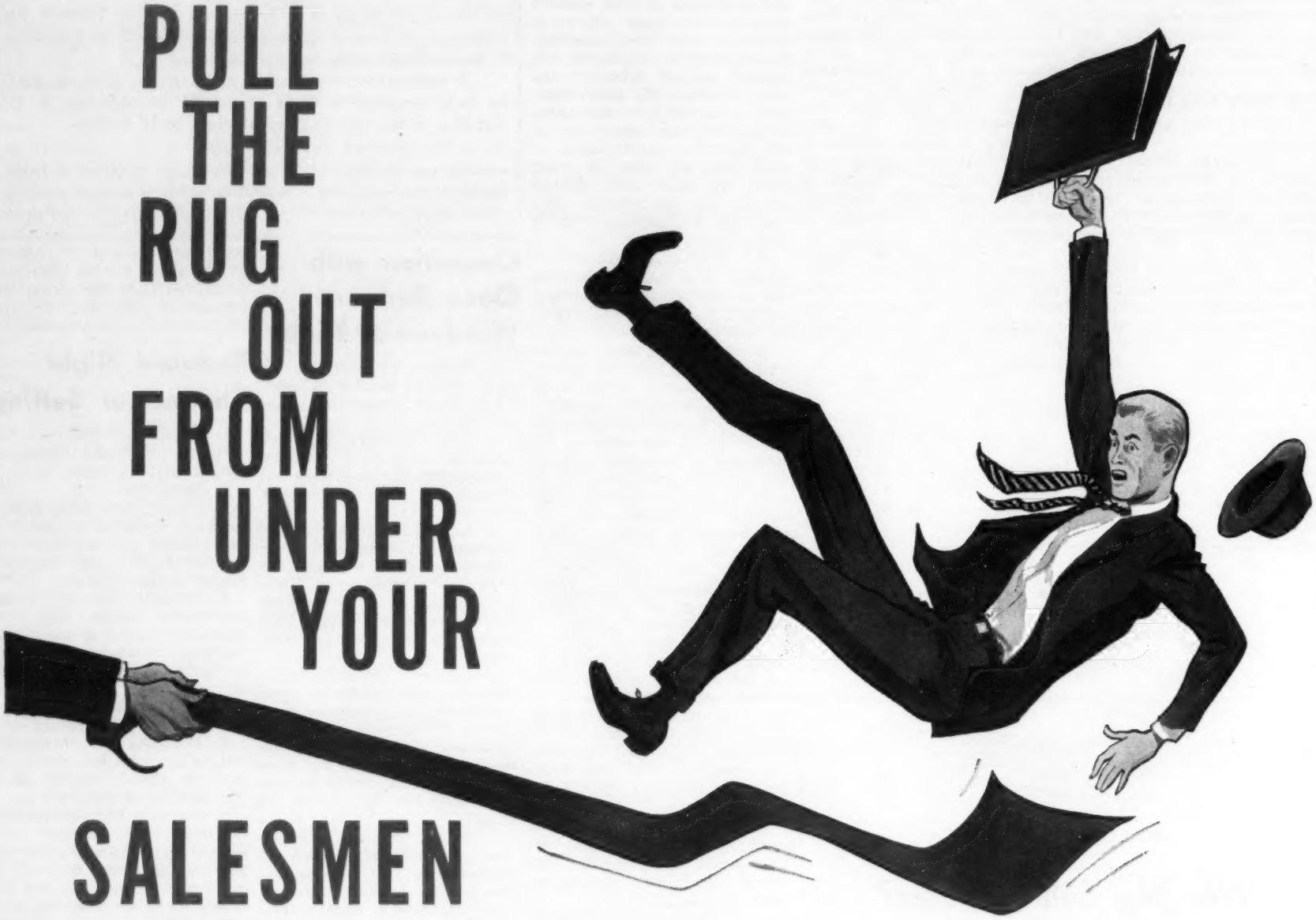

The day of *salesmanship* is here—and no one knows it better than your competitor! That's why your salesmen need every bit of backing they can get.

That's why failing to advertise *regularly* can amount to pulling the rug right out from under your salesmen, leaving them without the competitive advantage of having their sales story seen *repeatedly* by the men they must sell.

Every call your salesmen make is more important than ever. You can help make each call more effective by pre-selling prospective customers through industry-wide advertising in AIR CONDITIONING, HEATING & REFRIGERATION NEWS, the Weekly Newspaper of the Industry.

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- **NEW YORK**, 521 FIFTH AVE., MURRAY HILL 2-1928-9, ROBERT M. PRICE.
- **CHICAGO**, 134 S. LA SALLE ST., FRANKLIN 2-8093, REX SMITH.
- **LOS ANGELES**, 4710 CRENSHAW BLVD., AXMINSTER 2-9501, JUSTIN HANNON.
- **DETROIT**, 450 W. FORT ST., WOODWARD 2-0924, AL SCHILDHAMMER.

Chart A—Return Air Grille Selections

Grille Size	Air Quantities Stamped Blade ¼" Bar	½" Bar	Mfg. Bar
8 x 4	44	48	68
8 x 5	58	62	88
8 x 6	80	87	107
10 x 4	55	59	86
10 x 5	75	81	110
10 x 6	95	105	135
10 x 8	125	135	190
12 x 4	70	76	105
12 x 5	92	98	135
12 x 6	105	112	165
12 x 8	160	168	230
12 x 12	230	....	360
14 x 4	85	92	123
14 x 5	110	123	158
14 x 6	135	143	192
14 x 8	190	200	260
14 x 10	215	230	330
14 x 12	260	....	415
16 x 4	85	92	140
16 x 5	110	120	182
16 x 6	160	170	225
16 x 8	200	215	325
16 x 10	230	242	400
16 x 12	274	....	480
18 x 6	180	192	255
18 x 8	240	255	340
18 x 10	260	275	450
18 x 12	340	....	550
18 x 18	515	....	855
20 x 4	110	120	178
20 x 5	145	157	230
20 x 6	200	212	280
20 x 8	270	280	380
20 x 10	325	335	480
20 x 12	370	....	590
24 x 4	145	155	215
24 x 5	190	200	275
24 x 6	240	252	340
24 x 8	335	340	465
24 x 10	400	405	595
24 x 12	480	....	745
24 x 18	730	....	1145
24 x 24	915	....	1545
30 x 4	180	186	270
30 x 5	240	255	345
30 x 6	300	315	440
30 x 8	420	430	585
30 x 10	500	508	760
30 x 12	590	....	935
30 x 18	840	....	1440
30 x 24	1130	....	1950
30 x 30	1400	....	2430
36 x 6	320	....	500
36 x 8	440	....	700
36 x 10	555	....	895
36 x 12	675	....	1140
36 x 18	1020	....	1745
36 x 24	1375	....	2350
36 x 30	1730	....	2980
36 x 36	2080	....	3600
48 x 18	....	....	2320
48 x 24	....	....	3045
48 x 30	....	....	4035
48 x 36	....	....	4790

Kelvinator Shifts--

(Concluded from Page 1, Col. 4)

man said sales aspects of this position will be taken up by Homer L. Travis, who continues as vice president in charge of sales for Kelvinator-U.S.

Chapman said Kelvinator has been engaged during the past year in some basic consolidation and organization moves designed to strengthen its position both in the United States and in the rapidly growing world markets.

"One result of these moves has been the overlapping of some functions," Chapman said. "It has been considered desirable to eliminate the partially duplicated position of vice president and general manager of Kelvinator-U.S. As a consequence of this, we regret to announce that Walter Jeffrey has resigned."

Chapman also stated: "We are confident that the moves of the past few months have greatly strengthened our position and make it possible to take maximum advantage of our unusual opportunities."

Chart B—Refrigerant Line Sizes

(Based on 40° Suction—105° Head Pressure—100 equivalent feet)

Capacity (B.t.u.)	Refrigerant-12 *Liquid	†Suction	Refrigerant-22 *Liquid	†Suction	Carrene No. 7 *Liquid	†Suction
24,000	⅛"	1⅛"	⅜"	¾"	⅛"	⅞"
30,000	⅛"	1⅜"	½"	¾"	½"	⅞"
36,000	⅛"	1⅜"	½"	1⅛"	½"	1⅛"
42,000	⅜"	1⅜"	½"	1⅛"	½"	1⅛"
48,000	⅜"	1⅜"	½"	1⅛"	½"	1⅛"
54,000	⅜"	1⅜"	½"	1⅛"	½"	1⅜"
60,000	⅜"	1⅝"	½"	1⅛"	⅝"	1⅜"
66,000	⅜"	1⅝"	½"	1⅛"	⅝"	1⅜"
72,000	⅜"	1⅝"	½"	1⅛"	⅝"	1⅜"
78,000	⅜"	1⅝"	⅝"	1⅜"	⅝"	1⅜"
84,000	⅜"	1⅝"	⅝"	1⅜"	⅝"	1⅝"

*Pressure Drop Approximately 2° F/100' of Length.
†Pressure Drop Approximately 2° F/100' of Length.
Taken From Section 25, Carrier Engineering Manual and ASHAE Guide.

* * *

Fort Worth Cooling, Heating Standards--

(Concluded from Page 1, Col. 5)

should be done by the manufacturer or his representative if the variation is one of equipment design and by the installer if it is one of installation variation."

Text of the standards follows:

1. Equipment selection basis
A. Heating—70° F. inside @ 10° F. outside.
B. Cooling—78° F. inside @ 100° F. d.b. and 78° w.b. outside.
400 c.f.m. per ton.
(Each installation qualifying for ACA seal to be substantiated by heat gain and/or loss calculation and duct layout, at the place of business of the firm making the layout.)
2. Distribution systems
A. Duct sizing
1. Supply: Maximum trunk size designed on .08 in. static for 100 equivalent feet of duct but shall not exceed 1,000 f.p.m. velocity.
Maximum branch size designed on .08 in. static for 100 equivalent feet.
2. Return: Maximum duct size designed on .06 in. static for 100 equivalent feet.
B. Supply register selection
1. High sidewall: 750 f.p.m. maximum face velocity.
2. Floor registers: 750 f.p.m. maximum face velocity.
3. Ceiling diffusers: 750 f.p.m. maximum face velocity.
4. Ceiling rectangular: 750 f.p.m. maximum face velocity. (Applies to L 200 Series Titus only.)
(All registers equipped with shut-off control.)
C. Return air grille selection
(See Chart "A")
D. Duct material
1. Sheet metal
a. Rectangular to comply with ASHAE standards of gauge.
b. Pre-fab duct and fittings of galvanized iron minimum gauges:
4 in. through 9 in.—30 gauge
10 in. through 14 in.—28 gauge
16 in. and over—26 gauge
2. Pre-formed glass fiber
Applied in conformity with manufacturer's recommendations and/or city plumbing code.
E. Duct insulation selection
1. Attic distribution
a. Heating—1-in. glass fiber—½ lb. density.
b. Cooling—2-in. glass fiber—½ lb. density, .002 aluminum foil backing.*
2. Counterflow distribution
a. Heating—none required
b. Cooling—1-in. glass fiber—½ lb. density with .002 aluminum foil backed.* (crawl space application)
3. Furred-in system
a. Heating—none required
b. Cooling—1-in. glass fiber—½ lb. density with .002 aluminum foil backing.*
4. Return ducts in attic
a. Heating—1-in. glass fiber—½ lb. density.
b. Cooling—1-in. glass fiber—½ lb. density with .002 aluminum foil backing.*
* Alum-backed vapor barrier should be applied with 4-in. lap along the longitudinal seam and with 2-in. tab or equivalent in lap at the butt joint and fastened with staples 3 in. on center.
F. Refrigerant lines sizes — (See Chart "B")
G. Design and application
1. All branch take offs from main line to be enlarged by at least 120% of the volume of the branch line and to have adjustable air dampers.
2. All duct transitions from round to rectagular to be tapered fittings so as to provide minimum air flow resistance.
3. All duct systems installed air tight. Prefab ducts screwed and taped at the joint and suspended with galvanized metal straps.
4. Crawl space returns on heating and/or air conditioning not acceptable unless vapor barrier of reinforced poly vinyl or 55-lb. roofing felt is applied to ground surface.
5. All ducts (supply and return) on crawl space application not to be in contact with earth.
6. Return air inlets to be located so that no air from a more distant room shall be drawn across the floor of the living area. If house is a two-story or split level a return must be taken from the lowest area.
7. All suction lines insulated w/½ in. wall thickness foam plastic or preformed fiber glass pipe cover w/vapor barrier.
8. Overflow pan w/separate drains on all coils installed in attic space.
9. All equipment should be installed in such a manner that the customer can (if desired) easily remove the filters and oil the blower and blower motor. Also any component part such as the coil, a blower, etc. should be readily removable for repairs. An inspection door or plate should be provided to inspect the coil.
H. Contractor's qualifications
1. Maintain place of business other than home.
2. Provide adequate facilities and personnel of own employ or contract agreement with fully qualified and reputable service organization.
3. Insured under Workmen's Compensation-Public Liability and Property Damage.
4. Member in good standing of Tarrant County Air Conditioning Association.
5. Engineering ability to comply with design critera established here-in.
6. Credit rating of good standing.

Excise Tax Ruling--

(Concluded from Page 1, Col. 2)

must apply to all room air conditioners, regardless of capacity.

The contemplated change in ruling would apply the tax to all room air conditioners up to 25,000 B.t.u. capacity. This is somewhat beyond the limits which manufacturers would like to see, and could conceivably include certain central residential systems.

However, it is believed that there will be definitions which will limit application of the tax to equipment designed "for use as a room air conditioner" and "primarily for the free flow distribution of air without ducting."

The Air-Conditioning & Refrigeration Institute and the Room Air Conditioner Section of the National Electrical Manufacturers Association have put up a united front in presenting the industry's viewpoint to IRS, and it is believed that there will be little chance of the tax being applied beyond the meaning of the statute—which is conceded by all concerned to be a room air conditioner in the generally accepted meaning of the term.

Ranco Dividends

COLUMBUS, Ohio—Directors of Ranco, Inc., recently declared a quarterly dividend of 30 cents per common share, payable June 26 to stockholders of record June 12.

Pa. Dairy Ruling--

(Concluded from Page 1, Col. 2)

license on the grounds that it had violated the commission's rules of trade practices by lending refrigeration equipment free to 22 of its wholesale customers.

The dairy appealed the commission's action to the court of Common Pleas in Philadelphia county. Judge Theodore L. Reimel ruled that the commission may not arbitrarily prohibit acts which in themselves do not violate the milk control act. He held that the regulation prohibiting the giving or lending of refrigeration equipment was unreasonable and beyond the necessities of the case.

The commission appealed the judge's decision to superior court on the ground that it was unjustly decided.

Last March 6, the commission issued a bulletin warning dairies and their customers that the question of the validity of the rules had not been finally decided.

The bulletin advised dairies that "in the event they supply customers with refrigeration equipment without charge before the validity of the rules is finally resolved they stand the risk of being cited by the commission for suspension or revocation of their licenses should the question be ultimately decided in the commission's favor.

"Dealers (dairies) are further advised that if they are willing to accept this risk they should inform their customers that they, as purchasers of milk, are equally responsible under the law and stand the risk of prosecution and possible fine or imprisonment."

Acme Expands--

(Concluded from Page 1, Col. 5)

This is in addition to the original plant which is still in use.

"At the same time we began a research and development program with two objectives in mind: to boldly improve the existing Acme products and to broaden the Acme line to include a full line of equipment for complete chilled water and direct expansion air conditioning systems in a wide range of sizes.

"The sales force was also expanded to over twice the size it had been in order to provide Acme customers with better service on the expanded product line.

"Our substantial investment in this expansion program is now beginning to bring us returns. We have set new sales records in each of the past two months and our field quotation and specification records indicate a continued high rate of activity.

"Not only is volume up substantially but a good 25% of our field sales is coming from products which were not in the Acme line in their present form or were not in the Acme line at all just a year ago."

Third-quarter figures compared to a year ago show shipments up 55%, incoming sales up 33%, and with backlog up 42%. The number of quotations submitted to customers has more than doubled indicating continued activity.

Recony Fire--

(Concluded from Page 1, Col. 4)

days." A temporary warehouse was set up shortly after the fire.

The assembly building reportedly contained some 15 units in various stages of assembly. One completed unit in a box car on a siding at the rear of the building was destroyed along with the box car.

Among other items in the warehouse were about 100 gasoline engines used in the air conditioning units. Source of the fire was not immediately determined.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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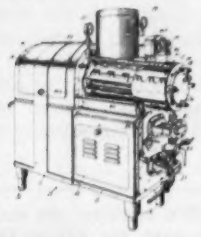
PATENTS

Week of Jan. 13 (Continued)

2,867,994. REFRIGERATION APPARATUS. Alden H. Wakeman, Lakemills, Wis., assignor to The Creamery Package Mfg. Co., Chicago.

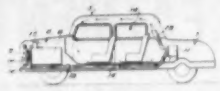


1. A freezing apparatus for ice cream mix or the like comprising an elongated first refrigerated compartment having a relatively large cross-sectional area through which the mix initially passes; power actuated first means movably mounted within said first compartment for simultaneously aerating and vigorously agitating substantially the entire volume of mix contained within said first compartment as the mix moves longitudinally through said first compartment toward one end thereof. . . . .

2,867,995. ICE CUBE EJECTION MEANS. Walter H. Weinrich, Kenneth C. Mudd, and Duane E. Noecker, Galesburg, Ill., assignors to Midwest Mfg. Corp., Galesburg, Ill.

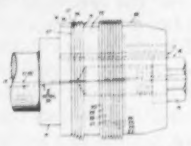
1. A bracket for the removal of ice cubes from an ice cube tray containing a cube-forming grid, said bracket having guide means for guiding an inverted tray for sliding movement along the bracket, and said bracket having a portion positioned to be engaged by the grid to operate the grid to release the ice cubes as the tray is slid along the bracket.

2,867,996. COOLING MEANS FOR VEHICLE MOTORS. George P. Bullard, Pottstown, Pa.



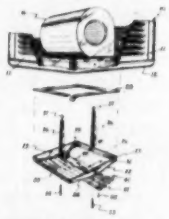
1. An air conditioning and motor cooling system for attachment to a conventional motor vehicle having an engine, a fan driven by said engine, and an engine cooling radiator at its front end, and a luggage compartment at its rear end; including a compressor adjacent said engine and driven thereby, an air conditioning unit in said luggage compartment operatively connected with said compressor, ducts for conducting cooled air to the passenger compartment of said vehicle. . . .

2,868,046. APPARATUS FOR MANUFACTURING INTEGRAL FINNED TUBING. Raymond H. Greene, Detroit, Mich., assignor to Calumet & Hecla, Inc., Chicago, Ill., a corporation of Michigan.



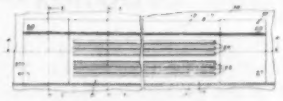
2. A roll pass for rolling up fins from tubular stock comprising a plurality of crossed axes rolls, each roll comprising a rotary support arbor, a first group of coaxial annular fin-forming members, a second group of coaxial annular fin-forming members, rigidly assembled together on said arbor, the radially inner portions of said annular members of each group being of uniform thickness, the peripheral portions of the members of each group being spaced axially of the arbor to provide annular grooves therebetween, the peripheral portions of the members of each group having uniform pitch, a spacer between said groups, said spacer having a thickness which exceeds a multiple of the pitch of the peripheral portions of the annular members in adjacent groups by an amount approximately equal to the elongation of the stock caused by the rolling action of the group of annular members ahead of the spacer.

2,868,102. MOUNTING STRUCTURE FOR AIR CONDITIONING APPARATUS. Oscar C. Melgaard, Phoenix, Ariz.



1. In combination in a mounting structure for an air conditioning apparatus comprising a cooler housing having a mounting surface adapted to engage the outside of a structure to be air conditioned, said structure including an opening aligned with a blower discharge opening in said cooler housing, a grille frame adapted to engage the inside of said structure to be air conditioned around said opening therein, a cross member forming an integral part of said frame, a clamping means located in said opening. . . .

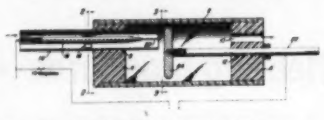
2,868,103. HOT AND COLD AIR BASEBOARD REGISTER. Zeno F. Molitor, Stockholm, Ill.



1. A hot and cold air baseboard register comprising an elongated hollow sheet metal casing having a bottom adapted to rest on a floor and an upstanding rear wall adapted to be disposed against a wall, said casing including a front wall having an upper set and a lower set of elongated openings each extending longitudinally of the casing, a louver associated with each of said openings. . . .

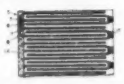
Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

2,868,318. COLLECTION OF AIR-BORNE MATERIAL BY ELECTROSTATIC PRECIPITATION. William A. Perkins, Los Altos, Stuart W. Grinnell, Menlo Park, and Conrad P. Schadt, Palo Alto, Calif., assignors to the United States of America as represented by the Secretary of the Army.



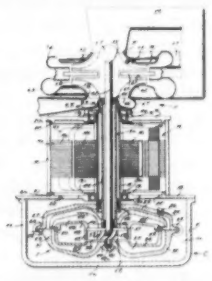
1. An electrostatic precipitator comprising a longitudinal tube having an anode surface therein perpendicular to and supported by a central shaft coincident with the axis of said tube, a pointed cathode supported normally and in close spacing to said anode surface and to one side of the center thereof including means to admit air around said anode in a stream confined to a small area of said anode and including electrical means to supply a direct current potential difference of 8,000 to 10,000 volts between cathode and anode.

2,868,319. ELECTROSTATIC AIR FILTER CELL WITH CONDUCTIVELY STRIPED FILTER WEB. Richard D. Rivers, Louisville, Ky., assignor to American Air Filter Co., Inc., Louisville, Ky.



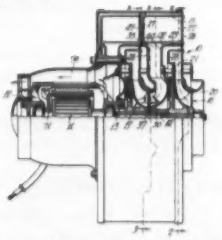
1. An electrostatic air filter cell comprising an open-faced perimetric frame, a web of air pervious di-electric air filter material mounted within said frame and having its edge portions disposed in abutting relation therewith, and means for distributing an electrostatic charge over said web including, a first series of electrically conductive stripes on said web terminating adjacent one edge thereof. . . .

2,868,438. COMPRESSOR. Howard M. Gammon, Claridon Township, Geauga County, Ohio, and Achilles Charles Sampietro, Detroit, Mich., assignors to Thompson Products, Inc., Cleveland, Ohio.



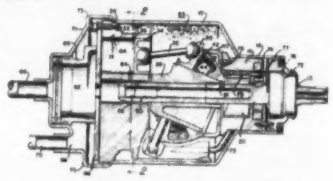
1. In a speed increaser for a refrigerant pump, a pump element comprising upper and lower annular, trough-shaped members having abutting peripheral edges and together providing an annular space therebetween, the lower member having formed therein a plurality of circumferentially spaced pumping passages extending radially outwardly from a center inlet zone to a discharge zone, a hollow drive shaft connected at one end to said upper member and extending upwardly therefrom for attachment to a prime mover. . . .

2,868,440. MULTI-STAGE CENTRIFUGAL BLOWERS, COMPRESSORS AND THE LIKE. Kenton D. McMahan, Scotia, N. Y.



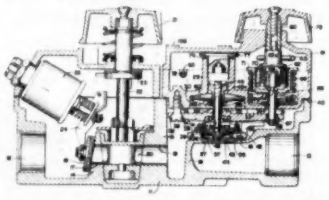
1. A multi-stage centrifugal machine for compressing gas or vapor, comprising a casing, two successive stage units in said casing comprising two successive coaxial stage impellers respectively, inlet means for the earlier stage unit, the later stage unit having an axial inlet suction eye and outlet means for the discharge from the later stage unit. . . .

2,868,443. REFRIGERATING APPARATUS. John Dolza, Davisburg, Mich., assignor to General Motors Corp., Detroit.



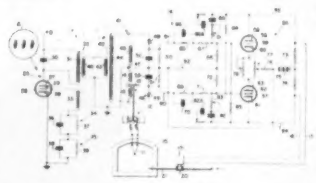
In an axial type of compressor, a stamped sheet metal housing having a circular portion provided with an internal beveled surface adjacent its one end and having a reduced cylindrical neck portion adjacent its opposite end, a bearing insert having a press fit within said neck portion, a cylinder block having a beveled surface complementary to said first named beveled surface, said cylinder block being shiftable sideways relative to the axis of said circular portion in response to engagement of said complementary beveled surface. . . .

2,868,457. COMBINATION VALVE CONTROL. Courtland B. Curris, Los Angeles, and Roger S. Loveland, Temple City, Calif., assignors to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.



1. A valve comprising a valve body having an inlet and an outlet and a valve seat therebetween, an opening in a side of said body with the outer peripheral edge of said opening being substantially parallel with the surface of said valve seat, a valve subassembly having a cup-shaped housing with a peripheral surface coextensive with and registerable with said peripheral edge of said opening, a valve seat member carried by said housing and substantially parallel to said peripheral surface, said member having an opening therethrough aligned with an opening in said valve seat. . . .

2,868,458. ELECTRICAL CONTROL APPARATUS. Warren Moore, Jr., Philadelphia, Pa., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis.



4. An electrical controller, comprising in combination, a pair of normally balanced impedance circuits, one of which is arranged to be varied by an element responsive to a variable to be controlled, an intermittently operative alternating source of potential connected to supply energy to both of said pair of circuits. . . .

2,868,513. HEAT EXCHANGER. Stanley C. Orr and Donald E. Kropp, Elyria, Ohio, assignors to Pfaudler Permutit Inc.

3. A heat exchanger comprising a tubular, ferrous metal shell, ferrous metal tube sheets of greater diameter than the shell and connected to the shell at its ends to define therewith a chamber for fluid, covers on the remote outer surfaces of said tube sheets, tubes extending through said chamber and tube sheets and expanded into engagement with said tube sheets, weld metal joining the ends of said tubes to said covers. . . .

(Continued on next page)

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REFRIGERATION APPLICATION engineer required by midwestern Ohio compressor manufacturing firm. Send resume of personal background, education and general salary level expected. Replies held confidential. BOX A6248, Air Conditioning, Heating & Refrigeration News.

PRODUCT & APPLICATION engineer —Leading manufacturer of expanding line of residential heating and air conditioning equipment has positions for project design engineers: (1) Design Engineer for residential heat pump and air conditioners, 2, 3, 5 horsepower. (2) Application Engineer for residential heating and air conditioning. (3) Design Engineer for residential gas furnaces. Must be college graduate with two years' experience. All replies held in strict confidence. Mail resume to BOX A6250, Air Conditioning, Heating & Refrigeration News.

MANUFACTURERS AGENTS — For sale of complete line of commercial refrigeration coils, unit coolers, etc., of national coil manufacture, to O.E.M. and wholesalers in the following territories: 1. Indiana, Southern Ohio, Kentucky and Tennessee. 2. Virginia, North and South Carolina. 3. Arkansas, Louisiana, Mississippi and Alabama. 4. Georgia and Northern Florida. Send resume and lines now carried to BOX A6254, Air Conditioning, Heating & Refrigeration News. Replies will be held confidential.

WANTED ONLY in St. Louis, Detroit, Philadelphia, qualified refrigeration jobber outlet, with A-1 contacts at key refrigeration contractors level, for exclusive-area representation of "50-yr. proved" refrigeration lines of West Coast manufacturer. Letterhead reply to BOX 6255, Air Conditioning, Heating & Refrigeration News, include full resume.

WANTED: EXPERIENCED service engineer. Must have minimum of 5 years field service. Should also have some office experience. Will require some traveling. Our company is a fast growing compressor and condenser unit manufacturer located in the midwest. Good opportunity for advancement. BOX A6256, Air Conditioning, Heating & Refrigeration News.

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MISCELLANEOUS

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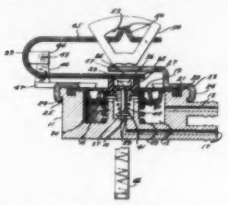
PATENTS

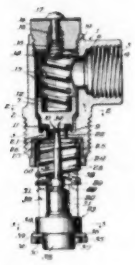
(Continued)

2,868,459. VACUUM CONTROL DEVICES. Edward E. Modes, Chicago, Ill., assignor to The Dole Valve Co., Chicago, Ill., a corporation of Illinois.



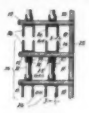
1. In a temperature responsive vacuum control valve, a valve casing having a valve chamber therein, a port leading from said chamber and adapted to have connection with a source of vacuum, an inlet into said chamber adapted to have connection with a vacuum motor and the like to supply vacuum to operate the same, a diaphragm extending over said chamber and having an annular wall extending outwardly therefrom, a port leading through said diaphragm within the margins of said wall for venting said chamber to atmosphere. . . .

2,868,460. TEMPERATURE AND PRESSURE RELIEF VALVE ASSEMBLY. George E. Hansen, Elmwood Park, and Edward W. Carr, Cicero, Ill., assignors to Crane Co., Chicago, Ill.



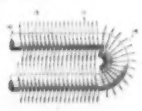
1. In a thermostatic relief valve, the combination of a casing, a closure member therefor, a temperature responsive element cooperating with the said closure member, means for attaching the said temperature responsive means comprising a depending sleeve member having transversely extending apertures. . . .

2,868,514. MOUNTING SINUSOIDAL PIN ELEMENTS IN HEAT EXCHANGE ENVELOPE. Peter Hodson and Sven Holm, Wellsville, N. Y.



In a heat exchanger having metallic plates constituting walls of a fluid passage, and a plurality of heat exchange elements mounted in spaced relation in said passage parallel to each other and the direction of fluid flow through the passage, each element consisting of an individual metallic wire bent to substantially sinusoidal form to provide a ribbon-like element formed of a plurality of U-shaped loops lying substantially in a common plane extending substantially perpendicular to said plates. . . .

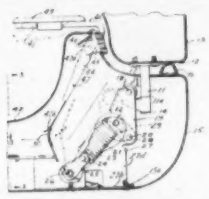
2,868,515. HEAT EXCHANGER CONSTRUCTION. Robert J. Garland, De Witt, N. Y., assignor to Carrier Corp., Syracuse, N. Y.



A heat exchanger coil construction comprising a continuous run of tubing in the form of a serpentine coil, said tubing having helical fins thereon comprising a ribbon of desired height and thickness having spaced portions thereof of less height than the body of the ribbon, the fins extending a uniform distance from the tubing along the length thereof except at the arcuate portions of the serpentine coil about which the spaced ribbon portions of less height are located thereby permitting adjacent sections of tubing to be placed closely together without interference between the fins at the spaced portions.

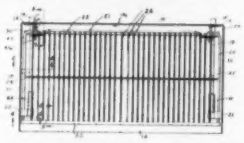
2,868,578. SAFETY RELEASE FOR REFRIGERATOR DOORS. Herbert D. Squire and Bezon N. Brandt, Galesburg, Ill., assignors to Midwest Mfg. Corp., Galesburg, Ill.

2. In combination with a hollow door having a front panel and a back panel spaced therefrom, and a door latch comprising an actuator pivotally mounted on the door between said panels and an over-center toggle spring mechanism disposed between said



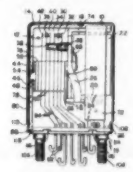
panels of the door and coupled to said actuator at one side of the latter's pivotal mounting and rearward from said pivotal mounting. . . .

2,868,607. REFRIGERATOR PULL-OUT SHELF. Herbert D. Squire, Galesburg, Ill., assignor to Midwest Mfg. Corp., Galesburg, Ill.



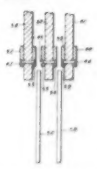
2. In combination on a refrigerator, a pair of guide rails rigidly supported within the refrigerator at opposite sides thereof and extending from front to back, a pair of slides supported individually by said guide rails for sliding movement therealong, each of said slides being formed with a channel which has an open end at its outer side larger than the corresponding guide rail and which receives the corresponding guide rail, a shelf, and means releasably connecting said shelf to said slides to move as a unit therewith, each of said slides being adjustable laterally of the shelf toward and away from the guide rail on which it is mounted.

2,868,925. ELECTROMAGNETIC RELAY. Oliver H. Grotelneschen, Wesley D. Henry, and Arthur R. Brinkruff, Logansport, Ind., assignors to Essex Wire Corp.



1. In an electromagnetic relay of the type having a magnetic core carrying a coil attached to one branch of an L-shaped magnetic frame and two contact spring pileup assemblies mounted upon the other branch of the frame for operation by a movable armature, the combination of a header terminal assembly and a supporting bracket having two like legs extending in the same direction at substantially right angles from opposite edges of one end of a base portion and having a third leg extending from the edge of the opposite end of the base portion in substantially the same direction as said two legs. . . .

2,868,927. SOLENOID INTERRUPTER. Joseph D. Wood, Wayne, Pa., assignor to L-T-E Circuit Breaker Co., Philadelphia, Pa.



1. An interrupting chamber adapted to interrupt an arc drawn between a pair of disengaging contacts; said interrupting chamber comprising a plurality of spaced iron plates, a corresponding plurality of spaced insulating plates, and a corresponding plurality of pairs of protruding ears; each of said pair of protruding ears extends through one of said corresponding insulating plates to be electrically connected to one another and to be positioned on opposite sides of said corresponding insulating plate and in spaced relationship with one another along the plane of said insulating plate. . . .

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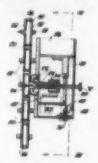
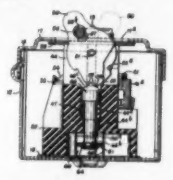
2,868,928. TEMPERATURE CONTROL DEVICES. Charles K. Strobel, Pittsburgh, and Guy F. Conner, West Mifflin, Pa., assignors to Robertshaw-Fulton Controls Co., Greensburg, Pa.



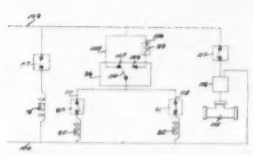
1. In a temperature control device, a closed container for thermally expansible fluid having a pair of side walls, one of said side walls having an aperture therein, said side walls being of thin sheet material and spaced in proximate relation to each other forming a thin elongated reservoir substantially rectangular in cross-section, and an expansible and contractible element secured at one end to said one side wall adjacent said aperture and subject to volumetric changes in the fluid. . . .

2,868,929. ELECTRIC SWITCHES OF THE CAM-LEVER-OPERATED TYPE. Martin F. Koenig, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.



1. A manually operated switch for making and breaking at least thirty amperes alternating current electric circuits, comprising a molded insulating base block having a recess formed in the inner surface thereof and having a pedestal projecting from the outer surface thereof, said pedestal having a passage extending therethrough and opening into said recess, plural electric terminals on the base block. . . .

2,869,060. ICE MAKER AND TIMER. Thomas B. Chace, Winnetka, Ill., assignor to The Dole Valve Co., Chicago, Ill.



1. In a timer, at least two alternately operable thermal elements, a shaft for performing a work operation, spaced ratchets on said shaft for rotating the same, a separate pawl lever for each ratchet freely mounted on said shaft, each pawl lever having a pawl thereon engageable with said ratchet for driving the same in one direction, said thermal elements each having a casing containing a fusible thermally expansible material and a power member extensible with respect to said casing upon predetermined rises in temperature. . . .

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Servicing Automobile Air Conditioners

(Vol. 4 — 1959 Models)

BY C. DALE MERICLE

With this issue we continue the fourth series of articles describing service procedures on automobile air conditioning units. In this and subsequent instalments 1959 models of the leading "independents" and automobile manufacturers will be described in detail.

CLIMATIC AIR (2)

Climatic Air Sales, Inc.
3030 Canton St.
Dallas, Texas

SERVICE HINTS

Evacuating System

Following initial installation or opening the system for repairs, it should be thoroughly evacuated.

Use of a good vacuum pump is recommended by this manufacturer, but Climatic Air advises that satisfactory evacuation can be obtained by operation of the compressor itself.

If the latter method is used, the engine should be operated at idle speed with the compressor clutch engaged. It is suggested that the discharge hose of the gauge manifold be inserted in a glass of clean refrigeration oil. When bubbles cease showing in the oil and the gauge shows a reading of 28 to 30 in. of vacuum, the system may be considered properly evacuated, the manufacturer says.

Charging System

Climatic Air systems are charged through low side with refrigerant in vapor state.

Charge is 2 to 2½ lbs. of Refrigerant-12 for under-dash systems.

Trouble Shooting

Poor cooling can result from:

1. Shortage of refrigerant.
2. Expansion valve feeler bulb loose on suction line.
3. Improper seating of compressor valves.
4. High head pressure.
5. Exceptionally high or low suction pressure.
6. Evaporator coil blocked with ice.
7. Condenser blocked with bugs, etc.
8. Moisture in system.

Remedies for the above compaints will be obvious to the experienced refrigeration mechanic.

High head pressure, for example, could be caused by air in the system, overcharge of refrigerant, or a blocked-up condenser.

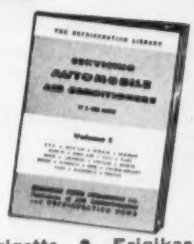
Freezing up of the evaporator coil could be due to improper fan operation, dirt reducing or stopping airflow through the coil, or improper setting of the thermostat, which can be reset in the field.

High engine temperature, sometimes encountered on air conditioned cars, usually is caused by partially clogged radiators and engine blocks. Careful cleaning and flushing are advisable. A heavy-duty fan may be needed. Poor or slow ignition timing could also cause overheating.

NEW — 1958 EDITION

Servicing Automobile Air Conditioners

(Volume II)



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Jan. Compressor Shipments Total 518,755 Units

WASHINGTON, D. C.—Manufacturers' shipments of compressor bodies in January totaled 518,755 units, the Small Compressor Section of Air-Conditioning & Refrigeration Institute reported recently.

Since units for use in household refrigerators are included for the first time in the January figures, there is no comparable figure for 1958, when manufacturers' shipments totaled 315,318 units, but did not include those for use in household refrigerators.

The figures are based on reports of manufacturers whose output is estimated to be in excess of 90% of U. S. production of compressor bodies.

Breakdown of shipments by size categories, and names of reporting companies, follow:

MANUFACTURERS' SHIPMENTS OF COMPRESSOR BODIES PRODUCED BY REPORTING COMPANIES

(Including units for household refrigerators)

Horsepower*	Shipments Including Exports January, 1959,
⅛ & under	99,480
¼	}
⅓	53,765
½	108,006
⅔	18,671
¾	8,200
⅚	5,778
1	95,797
1½	29,046
2	34,970
3	9,925
5	7,265
7½	3,207
10	1,237
15	384
20	126
25	187
30	135
40	160
50	88
60	73
75	46
100 & over	35
Total	**476,580**
For auto a.c.—Total	42,044
For ammonia—Total	131
Grand Total	**518,755**

Reporting companies: Airtemp Div.; Bendix-Westinghouse; Brunner Div.; Carrier Corp.; Copeland Refrigeration; Curtis Mfg. Co.; Frick Co.; †Frigidaire Div.; ‡General Electric Co.; Gibson Refrigerator Co.; Kelvinator Div.; Lehigh, Inc.; Tecumseh Products Co.; Trane Co., The; Vilter Mfg. Co.; Westinghouse Electric Corp.; Worthington Corp.; York Div.

*For all refrigerants except ammonia (excluding units for automotive air conditioning).

†Report includes units for automotive air conditioning only.

‡Report includes units for unitary air conditioning only.

Unless otherwise noted, this summary includes compressor bodies shipped by the reporting companies **regardless** of whether they were shipped separately or incorporated into a condensing unit or unitary end-use product (such as a self-contained air conditioner, display case, freezer, household refrigerator or commercial refrigerator). Reporting companies were specifically asked to include export shipments, units for household refrigerators, and replacement units that are not in warranty.

In order to avoid duplication of reporting, shipment figures were requested only from companies that assembled the machined compressor casting with the components necessary to make a complete compressor or motor-compressor assembly.

NOTES: In order to avoid disclosing the figures of individual companies, some data for two or more sizes are combined on ARI summaries.

Due to the inclusion of units for household refrigerators for the first time starting in 1959, comparable figures for 1958 are not available.

Gas Air Conditioning Sales School Scheduled for Dallas June 1 to 5

NEW YORK CITY—The Industrial and Commercial Gas Section of the American Gas Association has announced that its first gas air conditioning sales school will be held June 1-5 in the Hotel Baker, Dallas.

"The school is designed for the education of industrial and commercial gas air conditioning salesmen," according to the school program. "Its objective is to assist gas companies and gas air conditioning equipment manufacturers in training their personnel in the technical and sales aspects of gas air conditioning.

"The five-day course will cover the fundamentals of all types of air conditioning systems, together with the available equipment to meet cooling demands from a few tons to thousands of tons.

"Also to be discussed will be the various systems and installations ranging in size from the small professional office to the modern office building and large industrial plant.

"A one-day field trip will provide the opportunity for the group to observe the practical operation of several different types of air conditioning equipment."

Experienced representatives of gas companies, gas air conditioning equipment manufacturers, American Gas Association, and consulting engineering firms will comprise the "faculty," it was noted. The program lists 34 speakers in all.

Bound copies of the lectures will be provided for use at the school and for future reference.

Registration, which closes May 25, is limited to 150. The school is open to employes of gas companies, gas equipment manufacturers and dealers, and present and prospective gas customers. Tuition fee is $50.

10 Contractor Groups Oppose Bid-Shop Bill

WASHINGTON, D. C. — Representatives of ten specialty contractor associations in the building field, at a meeting here, expressed unanimous opposition to the current so-called anti-bid-shop bill (H.R. 176) and unanimous support to a recommended formula for retained percentages.

The group of contracting organizations, including the National Association of Plumbing Contractors and the Refrigeration & Air Conditioning Contractors Association, also opposed the legislation in the last Congress.

The recommended formula for retained percentages was developed by the Improved Construction Practices Committee of the National Association of Credit Management. This formula calls for retention of 10% until 50% of the job is completed, and for no retained percentage beyond that point.

The informal committee also discussed mutual labor problems, other legislation affecting the construction industry where joint action would be helpful, and considered the merits of additional contractor participation in the 1959 Family Conference on Housing.

Representing RACCA at the meeting was Leo Howard Kerns, executive secretary. Irvin L. Rechkemmer, NAPC vice president, represented that group.

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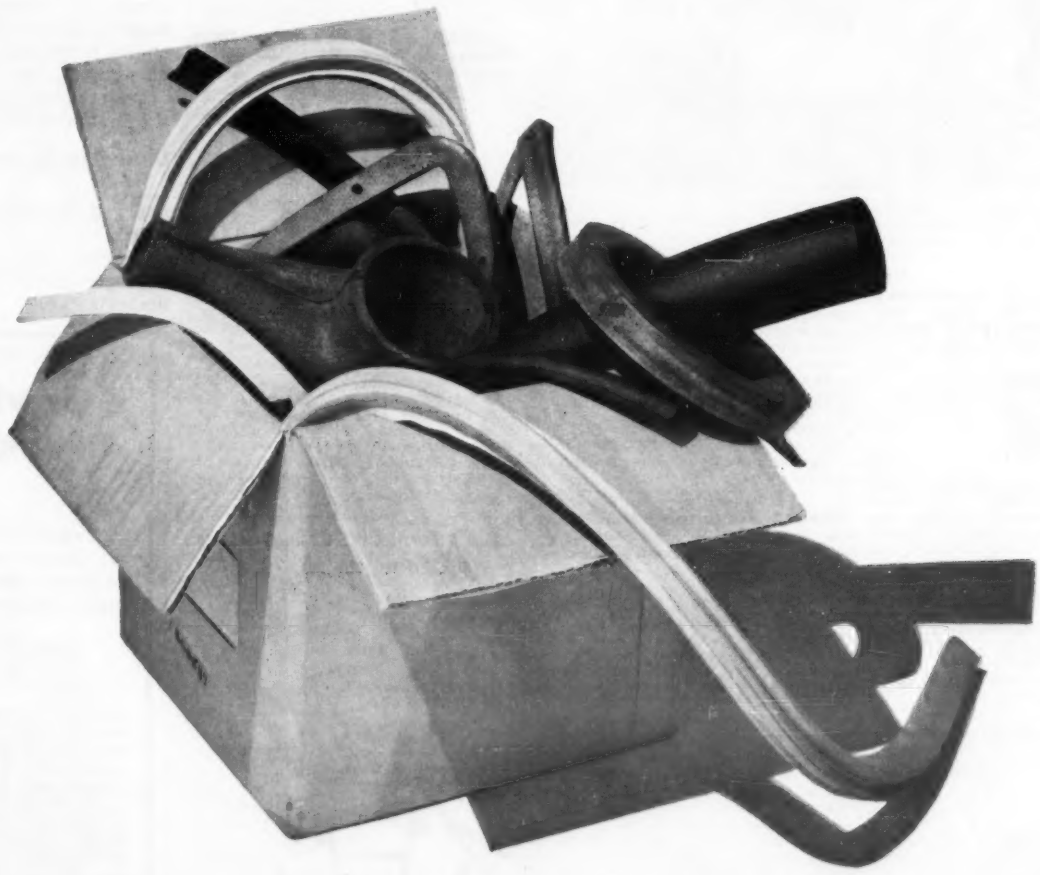

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